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Wyoming Archaeological Society, Inc.

Eva Peden, President
9 Appaloose Ln
Lander WY 82520 – 307-332-7432
e-mail epeden@tcinc.net

Nick Palmer, 1st Vice President
2214 Rooks Ave
Cheyenne WY 82007-3481
e-mail npalmer104@aol.com

Don Bailey, 2nd Vice President
555 Eugene St
Lander WY 82520 – 307332-6822

Carolyn M Buff
Executive Secretary/Treasurer
1617 Westridge Terrace
Casper WY 82604-3305 – 307-234-5424
e-mail cbuff@acad.cc.whecn.edu

Dewey Baars, Editor
1000 W 19th St
Wheatland WY 82201 – 307-322-2851
e-mail baars@netcommand.com

Dr. Danny N Walker, Managing Editor
Dept Anthropology – University of Wyoming
Laramie WY 82071 – 307-766-5565
e-mail dnwalker@uwyo.edu

Russ Tanner, Book Review Editor
745 Ridge Avenue – 307-352-0223
Rock Springs WY 82901

Richard Adams, Current News
519 S 12th Street
Laramie WY 82070
e-mail radams@missc.state.wy.us

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ANNOUNCEMENTS

SIERRA MADRE SOAPSTONE QUARRING EXPERIMENT: Cherokee Trails Chapter

Last summer members of the Cherokee Trails chapter of the Wyoming Archaeological Society quarried soapstone using replicated stone, bone and wooden tools in the Medicine Bow National Forest. Joyce Evans and Gary Herrold of the Cherokee Trails chapter organized 21 volunteers who gathered west of Encampment in the Sierra Madre Mountains on a fine Saturday last June. The work was conducted under a Forest Service special use permit awarded to the State Archaeologist's Office.

An outcrop of low quality soapstone on the western flank of the Sierra Madres, accessible by people of all abilities because of its proximity to a Forest Service road, was the location for the experiment. Long ago the source area was disturbed by dozer activity, so our small disturbance would not constitute an impact. This made it an ideal place to test the abilities of replicated prehistoric tools for quarrying soapstone.

There is no evidence of prehistoric quarrying at the numerous sources in the Sierras Madres that have been visited up to this point. This is not to say that they don't exist. The existence of aboriginally-utilized sources in the Sierra Madres is suggested by a soapstone bowl in the Grand Encampment Museum that was found on the Encampment River, and Taylor Pennock's recollections of soapstone bowls found along the river from the Peryam Ranch on up into the mountains (Conniss 1929:212).

The soapstone in the Sierras is not as soft or homogeneous as soapstone in the Laramie Range, Big Horns, Wind River, Teton and Gros Ventre Mountains. Sierra Madre soapstone occurs in thin bands in a suite of other similarly banded and folded rocks (Houston and McGraf 1995). The Sierra Madre deposits contain many impurities and bands of iron oxide within the rock.

Using bone digging tools at a soapstone quarry in the Sierra Madres.

Five tools were used in the experiment. The first tool was a stone pick with a three sided point made from a cucumber-sized piece of greenstone. It had been used previously to rough out the interior of soapstone bowls with good success. The second tool was a ground stone adze. The third tool was an antler pick that consisted of the rosette attached to a long section of shaft, the brow tine had been ground to a chisel-like point. The last two tools were a shovel and a hoe fashioned from cow scapulae and wooden handles. One handle was a peeled juniper bough. It was fastened to the scapula with rawhide. The second tool contained some modern components. A snow shovel handle was the shaft. The glenoid of the scapula was shoved through the handle so the long axes of the scapula and the shovel were perpendicular. The joint was then wrapped with rawhide.

The terms of the special use permit stipulated that we would not disturb more than two square meters. We laid out a one by two meter excavation block next to a soapstone boulder and started digging with the hoe and shovel.

By the end of an hour, we had removed about 2/3 of a cubic yard of dirt and cobbles. The hoe and the shovel performed well, both were only slightly less efficient than their metal counterparts. The hoe had a minimal amount of wear and some chipping of the scapula blade. The edge of the shovel blade had hardly any wear. Both bindings held up

Cherokee Trails Chapter family members digging at the soapstone quarry.

Using bison scapula shovel to remove overburden at the soapstone quarry.

well. The blades were still firmly attached to their handles.

The stone pick had not fared as well. Attrition of the point of the ground stone pick started as soon as it was put in use. The iron inclusions in Sierra Madres make it harder than aboriginally-utilized soapstone. After a couple of licks with the ground stone adze, it was decided not to risk ruining it by quarrying. Many hours had been invested in grinding the hatchet to the proper shape and it has roughed out the exteriors of a number of soapstone bowls. While not quite as efficient as the stone pick, the antler pick was easy to use.

Most of the quarrying we did consisted of moving dirt and cobbles from around the base of the boulder. We did try picking a groove around one projecting spur of the boulder's base, but Sierra Madre soapstone is so much harder than the soapstone use by the Sheepeater Shoshone that our stone tools were soon rendered useless. Even the grizzled ranchers on the trip were impressed by the efficiency of the scapula shovel and hoe.

The use of scapulae as shovels and hoes is so common in the ethnographic literature (e.g. Wilson 1977: 12, 105) that it is tempting to assume local prehistoric people made use of them along with digging sticks. Frison (1982) notes quartzite choppers were found at the Spratt quarry in the Big Horn mountains (Frison 1982). However, only two chipped stone tools suitable for working soapstone were found during recent research at soapstone quarries in the Wind River Mountains (Adams et al. 2002).

Last summer's experiment showed scapulae hoes and shovels are efficient tools for removing the overburden from bedrock sources. The utility of stone and bone quarrying tools is conditioned by the hardness of the soapstone being quarried. Even though Sierra Madre soapstone is soft enough to scratch with a fingernail, the iron-rich inclusions have a deleterious effect on the longevity of stone tools.

Bone and stone tools used in 2002 at the Sierra Madre soapstone quarry.

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Rich Adams
Wyoming State Archaeologist's Office
Laramie, Wyoming 82071

THE FREMONT AND PLANT RESOURCES ALONG THE COLORADO-WYOMING BORDER

by
A. Dudley Gardner and Barbara Clarke

ABSTRACT

Recent work in Wyoming, Utah, and Colorado is demonstrating the extent of maize agricultural may be extended into the canyons of the Green River. This paper will look at how the Fremont utilized plant resources along their northern frontier to extend their occupation northward. We will synthesize the results of recent excavations and surveys to explain the nature of Fremont agriculture north of the Gates of Ladore on the Green River.

THE GREEN RIVER ARCH

The Green River flows southward through western Wyoming into a series of canyons the river has cut through the Uinta Mountain Range. The canyon land begins roughly where the Green River strikes the Rock Springs uplift north of present Green River Wyoming and extends southward to just north of Jensen Utah. The canyons contain both the artifacts and structured remains of the Fremont Culture. From a point near the confluence of the Green and Blacks Fork rivers, south through Flaming Gorge Reservoir, and to the Gates of Lodore, the Green River flows through a canyon and park area exhibiting distinct manifestations of the Fremont. The findings by both Loosle (2000, 2001), Larson (2000) and the Buster Flats inventory (Gardner et al. 2002), in conjunction with numerous other data collected from this region, suggest a strong Fremont presence in Browns Park, and throughout the region.

FREMONT TRADITION

The Formative (post-Archaic) period in the eastern Great Basin, western Colorado Plateau, and north of the Colorado and Virgin Rivers, has been termed the Fremont tradition. Generally speaking, the Fremont were mobile horticulturalists continuing a hunter/gatherer tradition in the diverse environs of the region. The Fremont occupied the upper drainages of the Green River between A.D. 400 and A.D. 1250.

Investigators, since the first half of the 20th century, have argued over what constituted "Fremont" and "not Fremont." Most of the early work was predicated primarily on material cultural assemblages. Recognizable Fremont material includes architecture, rock art, granaries, a series of projectile point styles (Rose Spring/Rosegate, Uinta side-notched, and Cottonwood), basketry, "Fremont" pottery wares, anthropomorphic clay figurines, and specific types of ground stone tools. According to Madsen (1989:9-11) the Fremont tradition shares four distinctive attributes:

One-rod-and-bundle basketry construction;

Moccasins constructed from the hock of a deer or mountain sheep;

Artistic representations, as either clay figures or rock art motifs, of trapezoidal anthropomorphs with elaborate ornamentation;

A distinct coiled pottery tradition (Reed and Metcalf 1999:109)

Except for basketry, which is culturally diagnostic over the entire range of the Fremont (Adovasio 1980), none of the material culture inventory defines a coherent Fremont identity.

Madsen clearly pointed out while the various Fremont groups used similar tools and artifacts, their methods of making a living varied greatly. The Fremont subsistence and settlement patterns "ranged from sedentary groups dependent on both domesticated and locally procured wild resources, to sedentary groups that relied primarily on local wild resources, to nomadic groups that depended on resources from a variety of ecological zones . . . " (Madsen 1982a:218). He also alludes to the fact some Fremont peoples traded for corn rather than growing it (Madsen and Simms 1998:275). While there is a great deal of variability in how the Fremont subsisted, there were similarities in the material cultural remains they generated. Rock art, ceramics, baskets, Rosegate/Rose Spring projectile points, and granaries have similar characteristics throughout the area considered to contain Fremont. What is intriguing is the variability exhibited in the subsistence patterns. A theoretical shift has been proposed looking at the Fremont not so much as a cultural tradition but as a group of peoples behaving in a certain fashion to insure success in an environmental niche. Thus the Fremont should be examined "from the behavioral rather than a cultural perspective" (Simms 1990:1; Madsen and Simms 1998:276). It is instructive to view Fremont sites as part of a behavioral process; meaning it is good to look not so much at cultural assemblages but to evaluate the behavior they represent. The problem is to successfully evaluate behavior, it is important to have data sets from a variety of excavated contexts. For example, it would be necessary to have macro floral records

from excavated contexts at a variety of elevational zones illustrating the nature and types of plant species being procured and processed in the Browns Park area. To better understand Fremont adaptations to the Green River basin, it is best to look at what has been previously documented in the area.

The Fremont tradition has been identified in Utah, western Colorado, and to a lesser degree in southwest Wyoming, and eastern Nevada. This tradition, as Reed and Metcalf (1999) clearly contend, is characterized by considerable variation. In recognition of this variation, there are a number of identifiable regional Fremont variants: Uinta, San Rafael, Great Salt Lake, Sevier, and Parowan (Reed and Metcalf 1999; Marwitt 1980). These variants were associated with geographically specific regions and express some overlap in trait characteristics. The Uinta variant, which was localized in northeast Utah and northwest Colorado, is of particular interest to understanding the horticulturalists in Brown's Park. The Uinta Fremont encompasses three major topographical areas: the Uinta Basin, the Douglas Creek/White River drainage system, and Dinosaur National Park/Green River Arch. When this group occupied the region is still being defined, but a general acceptance of occupation of northwest Colorado from about AD 400 to the late 1500s is gaining acceptance (Reed and Metcalf 1999:114; Creasman and Scott 1987; Liestman 1985; and Truesdale 1993a, b).

Since the early 1980s, investigators have refocused their efforts on understanding the nature of the variation in relation to the larger questions of Fremont settlement and subsistence strategies and the relationships to climatic conditions and environment. Some investigators (Madsen and Lindsay 1980 and Madsen 1979) have proposed additional distinctions for Fremont regional variants. They formally differentiate between the Fremont, located east of the Wasatch Range in the Colorado Plateau, which included Uinta and San Rafael variants, and the Sevier, located west of the Wasatch Range in the Great Basin and incorporating the Parowan, Great Salt Lake, and Sevier variants. Larger villages occupying optimal arable land and access to available perennial water characterize the Sevier macro group region. The region containing the Uinta macro group overall had fewer optimal locations for horticulturalists and resulted in fewer large villages. Madsen and Lindsay (1980) did not consider their differentiation a cultural boundary but instead recognized distinctions based on settlement and architecture resulting from the exploitation of contrasting environments. Madsen (1979) has proposed an additional distinct prehistoric archaeological unit: "Fremont, Sevier and an unnamed Plains-derived culture in the Uinta Basin."

To better understand Fremont adaptations along the Green River corridor in northwest Colorado, an examination of the Fremont occupation chronology seems appropriate. Our focus is the Uinta Variant of the Fremont. We are looking at the Dinosaur national Park /Green River Arch Subgroup, but more specifically the Green River Arch extending north from the Gates of Ladore into Wyoming.

REGIONAL OCCUPATIONAL CHRONOLOGY

Marwitt (1986) describes the Uinta Fremont as inhabiting small hamlets or rancherias consisting of 4-6 small, shallow pit houses. The cultural deposits associated with these sites are usually thin, suggesting short, possibly seasonal occupations. He noted habitation sites were typically located on knolls, buttes, or hill slopes above creek flood plains. Anthropomorphic figurines and "Utah" metates are typically absent from Uinta variant sites. Marwitt's views and characterizations appear to be somewhat dated, especially when considering his view of the temporal parameters. He identified the dating of Uinta Fremont as between AD 650-950, with withdrawal from the area no later than AD 1000. A substantial amount of data has been gathered which contradict this stance.

Reed and Metcalf (1999:18) have divided the Fremont into four time periods in western Colorado:

Early Fremont	AD 1-550
Scoggin	AD 550-1050
Winger	AD 1050-1300
Texas Creek Overlook	AD 1300-1600

Spangler (1999) examined the patterns from radiocarbon dating of Uinta Fremont occupations based on some 400 radiocarbon assays. He suggests the dates for earliest Uinta Fremont are AD 250 and the latest are AD 1300. This roughly corresponds with the date of AD 1300 from the corncob within the granary at Site 5MF5067.

The departure of the Fremont from the area is not clearly understood. It has been speculated the Fremont dispersed into the surrounding regions or the Utes came into the area and assimilated Fremont groups. Up until two decades ago, there was a universal belief the Fremont departed the region around AD 1200. The radiocarbon date derived from Site 5MF5067 surpasses that date by 100 years. This suggests Fremont groups inhabited the Green River Valley well beyond AD 1200. Three other sites within the region have provided similar data. Site 42UN1103, located south of the Buster Flats project area in Dinosaur National Monument, produced dates of AD 1350 and AD 1520. Corncobs from Site 5MF379 and Site 5MF373, in the Blue Mountain area, were radiocarbon dated at AD 1130 and AD 1550 (Creasman and Scott 1987). All of these dates extend the Fremont occupation in northwest Colorado well into A.D. 1500.

Briefly, the Uinta Fremont Variant does exhibit unique local qualities. In the Douglas Creek core area, fortified structures, habitation sites, and granaries sit atop rock ledges or on sandstone outcrops. In the Uinta Basin a variety of

circumstances led to diverse types of settlements and storage systems. In Brown's Park the Fremont constructed small granaries in remote localities and made distinctive trapezoidal human rock art figures. Here we will refer to the Douglas Creek and Dinosaur National Park/Browns Park (Green River Arch) subgroups as the Eastern Uinta Fremont. More our focus is on the Green River north from the Gates of Ladore into Wyoming.

FREMONT ROCK ART

In southwest Wyoming and extreme northwestern Colorado and northeastern Utah the most readily identifiable cultural features associated with the Fremont are Rock Art. Fremont Rock art is one of the most prominent and distinctive traits associated with the Fremont. A number of different styles have been identified.

Burton (1862) provided one of the first descriptions of the Fremont tradition in Dinosaur National Monument. His focus, however, was primarily on "Fremont rock art." Looking at the attributes of rock art along the Yampa and Green River, he noted distinctive types including mountain sheep, trapezoidal figures, spirals, and anthropomorphs. Unfortunately, rock art is difficult to attribute to a specific person or group. Yet, the figures described were Fremont in Burton (1862) and were seen by Cole (1987) in Vermillion Canyon on the east side of Browns Park. Similar panels have been noted at Minnies Gap, Mud Springs, and on the west side of Flaming Gorge in Wyoming.

An identifiable Fremont presence with the full suite of cultural adaptations never expanded much beyond the Colorado state line. There were Fremont incursions or contact with indigenous groups occupying southwest Wyoming. There has never been archaeological evidence, either conclusive or even anecdotal, about the growing of crops, especially corn, in southwest Wyoming. Southwest Wyoming has too short a growing season for corn. However, protected locales along the Green River valley in Browns Park and Flaming Gorge apparently were protected enough. Site types across the state line in Wyoming are task-specific or resource extraction locales, where small task groups from the south visited for short periods to procure various resources such as tools tone or game, possibly through trade with the indigenous groups in Wyoming. Smith (1992) examined over 20 sites in southwest Wyoming with Fremont pottery lacking other Fremont traits, indicating there was contact with the area to the north but not settlement by Fremont groups. Creasman et al. (1988) examined sites with ceramic assemblages along the common border between Colorado and Wyoming. The focus was to determine whether Fremont ceramics were present. Fremont or Fremont-like ceramics were noted approximately A.D. 1150.

FREMONT SUBSISTENCE PATTERNS

Subsistence practices employed during the Formative period differed from the preceding Archaic. Instead of a nomadic to semi-nomadic foraging gatherer-hunters, Fremont groups in northwest Colorado utilized a strategy of foraging mixed with corn horticulture to supplement the diet. Obviously this could only occur in areas with growing seasons of sufficient length and seasonally available moisture. The introduction of corn is a fundamental change distinguishing the Fremont from earlier occupants of the area.

Plant resources constituted a significant portion of the Fremont diet. Acorns, pinyon nuts, and cattail were significant food resources. Cattail pollen, for example, provides 3,000 to 6,000 Kcal per hour of work (Barlow 2002:77). Cultivated crops included Chenopodium and maize. While Chenopodium as a cultigen among the Fremont has not received as much attention as corn, it possibly made up a significant part of their diet and was seemingly grown in most niches the Fremont occupied for any period of time. Corn cultivation, however, has been considered as a diagnostic attribute of the Fremont and their granaries considered a cultural marker. Granaries extend along the Green River north to the present Wyoming border. The granaries are relatively small, but most contain corn cobs in the fill.

As Hadden (2002) has noted the emphasis on corn cultivation as part of the Fremont adaptation may have been over emphasized in the past. It clearly appears the cultivation of Chenopodium may have been a mainstay in Fremont agriculture. Smith (1988), Scott (20010 and Clarke (2002) have shown the diversity of plants and Chenopodium in the archaeological record in the upper Green River drainage basin. But it is corn, right or wrong, that serves as a diagnostic marker in Fremont sites.

Clarke (2002) found Chenopodium, gambles oak, and cattail are all evident in the archaeological assemblage in southwest Wyoming in the period spanning 400AD to 1500AD. Pinon is noticeably absent in the assemblage. Gambles oak and cattail are not dominate, but Chenopodium is present in several sites (Clarke 2002; Smith and Creasman 1988). Chenopodium may have been the cornerstone of Fremont agriculture but the Fremont were known for cultivating corn. Corn, along the upper Green River has only been found, as far north as Dutch John, Utah (Loosle 2001). This, however, is not far from the Wyoming border. More the granaries recorded by Day and Dibble (1963) are just inside the Utah border. Two things are clear. First, corn and Chenopodium are part of Fremont culture (Hadden 2002). Second, the principle high calorie food sources used by the Fremont have been found in the archaeological record of southwestern Wyoming (see Barlow 2002:77 for energy returns for foraging and farming). But this second note is qualified with the fact the macro floral remains recovered in

southwestern Wyoming can not be directly associated with the Fremont. Nonetheless, future research might be geared toward looking for plant remains indicating association with the Fremont, especially in the canyons of the Rock Springs Uplift drained by the Green River.

In Dinosaur National Monument, corn from excavated sites has been found in all four of the major Fremont phases. Just 22 miles south of the project area, corn was recovered from primary contexts in rock shelters. Liestman (1985) found corn in a dated context spanning the period AD 400 to AD 1570. Interestingly, the wood in the most recently constructed feature, a retaining wall partially covering the mouth of the shelter, returned outside ring dates of AD 1568 and AD 1585 (Liestman 1985:32,28). The shelter also contained at least one and possibly two storage cists. The first cist was slab-lined; the second was a possible clay-and-wattle storage cist. Liestman (1985:ii) felt the latter dates indicate a late date for a group having "Fremont-like characteristics" and utilizing corn. Truesdale (1993) found corn in the Juniper Lodge Shelter in a component dating to 399 BC, making it the oldest corn found in Utah (Truesdale 1993:32-33). There has been some argument this date might be artificially early (Truesdale 1993a:33). Truesdale also found 104 corn kernels dating to AD 408 (Truesdale 1993b:33). What Liestman and Truesdale do document is corn is present along the Green River for a period spanning AD 400 and AD 1570 and possibly longer.

It has long been known granaries existed in northwest Colorado and southwest Wyoming, but many of these granaries had either not been adequately recorded or not recorded at all. Over the last ten years, this has changed. More significantly, the number of archaeological sites in northwest Colorado and northeast Utah yielding corn has increased dramatically. The earliest recognition of granaries along the Green River north of Browns Park was found in Day and Dibble's (1963) inventory of the Flaming Gorge reservoir. One of the granaries at Site 42DA30 is similar to the granary found at Site 5MF2723 (Day and Dibble 1963:44-45). Another researcher (Loosle 2000) has found corn in an open site north of the Green River. More recent work has resulted in the description of Fremont tradition granaries downstream of the Flaming Gorge reservoir (Loosle 2001). Stretching southeast from Dutch John, Utah, to near where the Green River enters Browns Park, Loosle (2000, 2001) has found granaries and corn at several sites. Most of this material is near the Green River in Red Canyon. Other regional investigations (e.g., Loosle and Johnson 2001; Markley and Loosle 2001) support the results from the Buster Flats inventory suggesting a high degree of variability in the storage systems spanning the area between Red Canyon and the Gates of Lodore.

FREMONT GRANARIES

While there is a great deal of variability in the types of granaries the Fremont constructed among the eastern Uinta Variant there are three generalized types. The first is relatively large (a minimum of 1m on both the x and y axis). This first type (Figure 1) is generally not located far from habitation sites or fields. The second type is a waddle and daub over a woven wooden stick structure(Figure 2). These are evident in fields and generally close to habitation sites. Waddle and daub structures do, however, sometimes appear in remote areas. The third type is relatively small and not near fields nor habitation sites (in general at least one of the axises will be less than 70cm long). These smaller granaries are in elevated areas sometimes in cliff faces and often in secluded areas. This last type is all that has been found in Browns Park and along the Upper Green River. For consistency sake the smaller granaries will be refereed to as "Brown's Park Granaries." It should be noted, however, in intensively occupied areas, like Douglas Creek and Nine Mile Canyon, all three types are present.

From the Flaming Gorge Dam south to the Gates of Ladore granaries with corn in the fill are found in remote overhangs, generally in elevated areas above the Green River (Day and Dibble 1963; Markley and Loosle 2001; Gardner et al. 2002). The granaries exhibit a great degree of variability, but consistently they are relatively small. Some are made from basketry, covered with mud, and are placed in rock overhangs (Markley and Loosle 2001). Some are wet laid sandstone structures less than a meter high. The exterior of these small sandstone granaries sometimes exhibit a smooth mud finish. Dibble and Day's (1963) granaries are more of a sandstone slab type feature. Others, like 5MF5067, are woven serviceberry, willow, or mountain mahogany cribs covered with daub. This waddle and daub structure is in a well-protected area. It is in a small cave and is possible a variant of the waddle and daub granary excavated by Creasman in Douglas Creek to the south (Creasman 1981a and b). In terms of macro floral corn has been found in many of these granaries, especially those in the Buster Flats area. One corncob in the granary at Site 5MF5067 returned a date of AD 1300 (Gardner et al. 2002).

Questions surrounding the granaries in Brown's Park abound. Why are the granaries in such remote locations? Why do the granaries exist in areas where today corn is not grown? The problem is in the Brown's Park area potential challenges to growing corn exist. First water, except along the Green River and at seeps and springs, is not dependable. Second the elevation is high enough frost can strike in June and August. Third, summer nights are too cool for corn to grow. So the question is when was corn grown in Brown's Park?

Currently there are some years when corn can be grown in Browns Park. In those years moisture would fall at the right time or irrigation from the Green River would substitute for rain. But more importantly there would be long periods without frost and the nights would be warmer. In

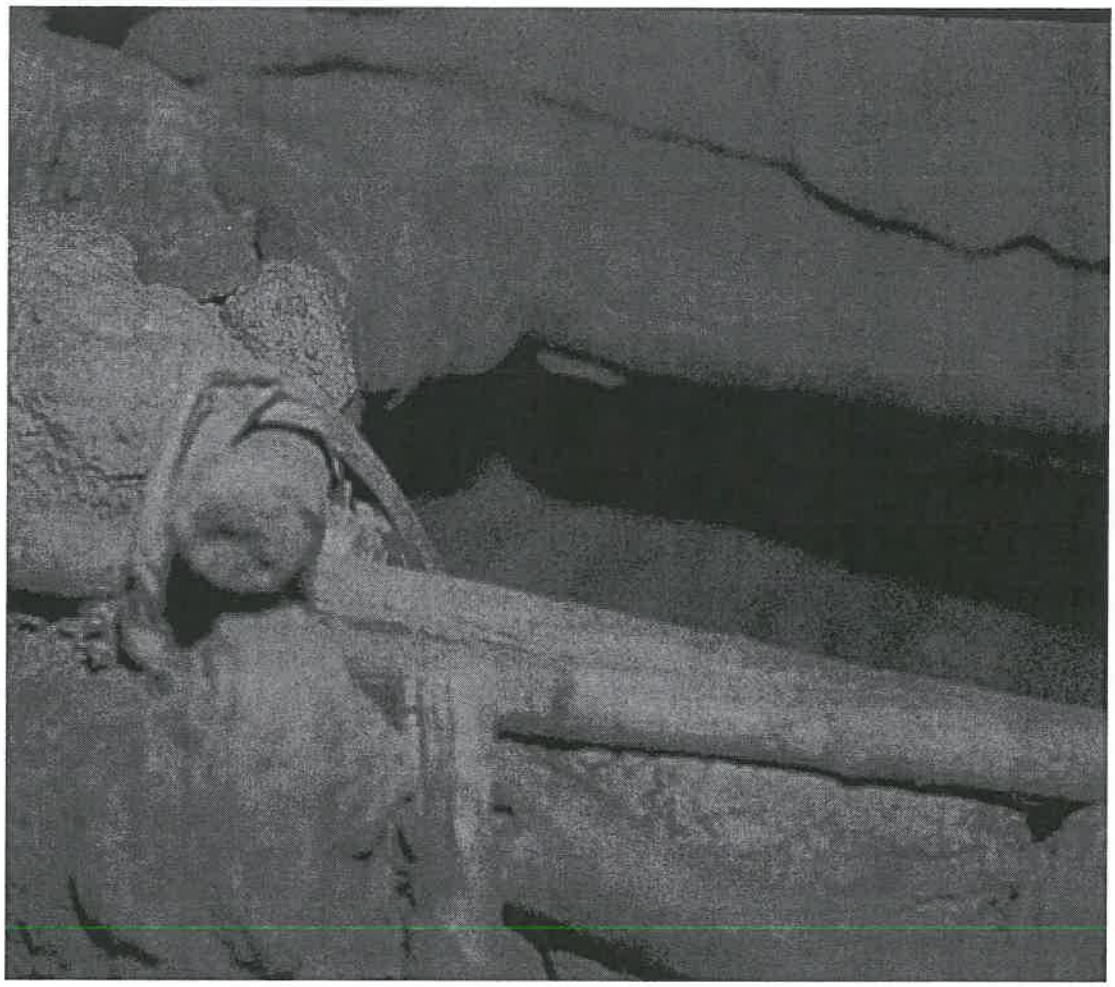

Figure 1: Fremont large granary, showing overall size of this group of structures.

terms of night time heat, the corn could be planted in areas with good thermal retention of heat so some growth continued into the evening. It is felt, however, there might not be consecutive good years where there was enough warmth to grow corn. For example, you might have good rains but short growing seasons. What might have happened is the Fremont learned, over time, what years would provide optimal returns for their efforts and corn would be planted during good years. Then comes another concern. How would you store seeds for future "plantings" over extended periods of time? To store corn seeds over time the granary would have to be sealed and dry. Thus a well constructed and tightly sealed granary would be desirable.

The volume of the granaries in the Buster Flats inventory area is not known –but it is suspected they range form two to four bushels of corn. While this is an adequate size, the granaries would hold little in terms of food storage. If, however, the granaries are holding seed corn for the next year or future years plants, the granaries size is reasonable. Since the Fremont in the area are mobile and would not stand guard over their seed granaries, placing them away from fields and habitation sites makes sense. More putting the granaries in remote isolated areas is logical as the granaries are not in areas where people normally travel. Clearly the Buster Flats granaries are away from both fields and habitation sites. There maybe a habitation site in a few rock shelters nearby, but these are not extensive occupation sites.

What needs to be understood is in Browns Park corn cultivation was pressed to its environmental limits and apparently the farmers were successful. What needs to be better understood is how far north did this agricultural effort extend? Was the extension just corn cultivation or were other plants like Chenopodium cultivated? With Fremont granaries evident right up to the Wyoming border and Fremont Petroglyphs inside Wyoming, what impact did the Fremont have in the Wyoming Basin?

ACKNOWLEDGMENTS

Portions of this paper are taken from Gardner et al. (2002). Project personnel, in the Busters Flat Survey in Brown's Park, recorded forty-nine archaeological sites (5MF5033-5MF5042 and 5MF5044-5MF5082), thirty-five

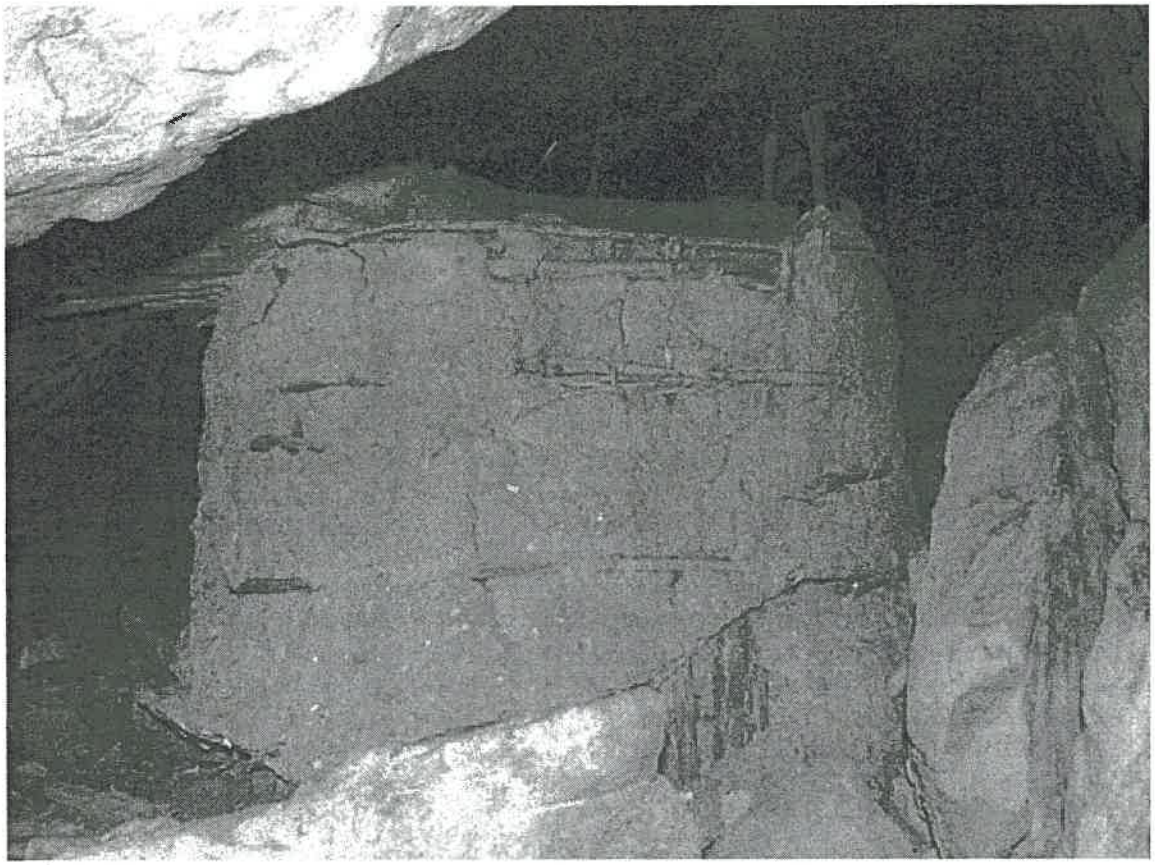

Figure 2: Detail of granary construction, showing wood, lashings, and mod plaster.

isolated finds (5MF5043 and 5MF5083-5MF5116), and revisited eleven previously recorded prehistoric sites (5MF265, 5MF266, 5MF267, 5MF1751, 5MF2722, 5MF2723, 5MF4095, 5MF4310, 5MF4496, 5MF4497, and 5MF4890) during the course of the inventory. Ninety-five sites plus many of those recorded by Larson in 2000 (Larson 2000) were visited as part of this project, taking the evaluated resources to over 100 evaluated resources.

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Dr. A. Dudley Gardner
Department of History
Western Wyoming College
Rock Springs, Wyoming

Barbara Clarke
Department of History
Western Wyoming College
Rock Springs, Wyoming

PUTTING THE BITE ON CRIME

EL PASO COUPLE FINED FOR TAKING ARTIFACTS El Paso Times On-Line, Sunday, October 13, 2002

ALBUQUERQUE — An El Paso couple have been fined for illegally collecting artifacts, such as arrowheads and other tools crafted up to 8,000 years ago, on the McGregor Range in Southern New Mexico.

John and Marcella Wortham were caught June 10, 2001, after a range enforcement officer spotted their car while flying his personal plane in the area, U.S. Attorney Peter Ossario said Saturday.

Each of the Worthams pleaded guilty to charges of disobeying a Bureau of Land Management closure order, trespassing on a military installation and violating the federal Antiquities Act, which prohibits removal of historic resources from public lands. On Sept. 20, U.S. Magistrate Judge Leslie Smith, based in Las Cruces, fined John Wortham $1,000 and fined Marcella Wortham $200.

http://www.borderlandnews.com/stories/borderland/20021013-31864.shtml

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CANYONS OF ANCIENTS HIT BY VANDALS

Farmington Daily Times Saturday, November 02, 2002

DOLORES, Colo. Vandals have caused several hundred dollars worth of damage to the south end of the Sand Canyon Trail in McElmo Canyon.

Graffiti was spray painted on the Canyons of the Ancients sign and BLM informational bulletin board. Nearby sandstone rocks, a highway sign, and both lanes of McElmo Canyon Road were also spray painted.

BLM crews have worked this week to repair the damage to BLM property. Labor and materials have cost about $500. If the large sign is not repairable, replacement cost will be an additional $450. BLM law enforcement officials say it appears the vandalism occurred Oct. 18. The vandals face federal charges of vandalism to government property, which can carry up to a one-year prison sentence and $100,000 fine.

Anyone with information on the incident is asked to call the Anasazi Heritage Center, (970) 882-4811.

http://www.daily-times.com/Stories/0,1413,129~6574~965696,00.html

PILLAGING OF ANCIENT ARTIFACTS A PROBLEM: The Durango Herald, November 25, 2002; By Jim Greenhill, Herald Staff Writer

DOLORES – The Bureau of Land Management ranger watched the man with the garden trowel and the woman with the collapsible shovel digging in the sagebrush.

The woman stood and saw Ranger Lanny Wagner. "We came up here looking for cactus, saw this stuff on the surface, and I guess we got a little carried away," she said. She was later identified as Tammy Woosley.

The couple were digging on a federally protected archaeological site near McPhee Reservoir. What they were digging up was the nearly 1,000-year-old bones of an ancestral Puebloan – or Anasazi – who lived on the site somewhere between the year 950 and the year 1075.

Earlier this month, Woosley and her companion, Danny Keith Rose, pleaded guilty in federal court to misdemeanors in connection with the episode. The details of what happened – including what was said – at Reservoir Ruin on the afternoon of Oct. 1, 2000, are in court records. The defendants agreed to the government's account of events as part of their plea agreement.

Federal land managers say the Reservoir Ruin case is a symptom of a problem throughout the Four Corners: the pillaging of archaeological sites to sell artifacts. Linda Farnsworth is an archaeologist with the San Juan Public Lands Center trained in archaeological resource law enforcement. "It's a problem," she said Thursday at the Reservoir Ruin site. "It's pretty widespread, and it's still occurring." Farnsworth estimated 15 incidents on U.S. Forest Service or Bureau of Land Management land in the region in the past year. "In no cases this year were we able to catch any suspects," she said.

In the Reservoir Ruin case, Ranger Wagner lucked out. Driving home on Colorado Highway 184, he saw the couple bent down in the sagebrush. A history of vandalism at Reservoir Ruin gave Wagner cause for alarm. Through binoculars, it appeared the couple were doing something to the ground. Wagner climbed the hill to the ruin and walked up behind the couple, watching them work before Woosley stood and saw him. Woosley pulled a stone from her back pocket and gave it to the ranger, saying it had come from the hole they were digging.

The stone was a scraping or smoothing tool that had probably been buried with the human remains as a funerary object, archaeologists later determined. Theft of artifacts from ancient sites and grave desecration offends American Indian tribes, including the Southern Ute Indian Tribe. "They were left there for a purpose," said Dorothy Naranjo, a secretary in the tribe's cultural preservation office. "They should be left alone." To desecrate a grave is to dishonor the person who was buried there, Naranjo said. And people who desecrate graves are also dishonoring themselves, she said. "They're being disrespectful to themselves," she said. Naranjo said grave desecration also carries the risk of releasing whatever was buried with the person.

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PROBABLE EDIBLE AND MEDICINAL FLORA USED BY PREHISTORIC HUNTER-GATHERER GROUPS IN THE BIGHORN AND WIND RIVER BASINS OF NORTH CENTRAL WYOMING

by
James J. Stewart

Readers need to be aware I am an avocational archaeologist and definitely not a botanist. The intent of this paper is to assist others with the objective of insights concerning the flora, food choices, and life styles of Native American hunter-gatherers of 2,000-12,000 years ago -- particularly concerning the Wind River and Bighorn Basins of western Wyoming. The reason for full listings, rather than the shortened version found in archaeological reports, is to aid the student who would not have access to an extensive bibliography. Although it may appear to be redundant to state much the same use of a plant as another, such repeated consistency for the learner shows a consensus among the researchers. This hopefully will help students construct their own thoughts and independently compare, contrast, and evaluate the information.

The following flora list represents vegetal species associated with prehistoric hunter-gatherer sites in the Wind River and Bighorn basins, of north central Wyoming. The archaeological sources for the list are primarily from Frison (1978), Guernsey (1989) (describing floral remains from the Legend Rock Petroglyph site, 48HO4), Scott-Cummings (1991) (describing macrofloral remains from a prehistoric site near South Pass City, 48FR434, and Scott-Cummings et al. (2001). The latter report investigates the flora remains found in six pit house features ranging in time from the Early Archaic through the Late Prehistoric Periods. The pit house features were found in the Beaver Creek vicinity near Riverton, Wyoming,

Also in this report are several contemporary flora counts from sites with evidence of hunter-gatherer occupations, including Miller Spring (48FR3309) and Onion Flats (48FR760). Different aspects of Miller Spring (in 1996) and Onion Flats (in 1997) have been researched as part of an educational archaeological learning program by students and staff at Wyoming Indian High School, with plant listings from those sites being submitted through that program.

The Miller Spring sites are in a grasslands/riparian habitat, surrounded by rolling hills with a dry grass/ sagebrush habitat. The immediate hill creating the drainage for Miller Spring, the spring, and the drainage down through the marshy lands below it constitute site 48FR3309. This is the area where the flora was inventoried and plant samples removed, and dried for display. The specific area has two Native American cairns, several small quartzite quarry areas, and appears to have been a general camp site spanning 10,000 BP to the past century, when it then became a homestead and cattle camp. The spring was developed in 1997 with a pipe leading to a cattle tank downstream into the marshy area (approximately 500 feet). The large quartzite quarry site at Miller Spring (48FR3979) is located on a long reasonably flat hill top, approximately 1/4 mile to the north of Miller Spring. There are sheepherder cairns on either (north and south) end of the hill with the quarry between the two. The hill is a sagebrush/grasslands habitat, with a sparse limber pine and mountain juniper mix. There is a seasonal riparian drainage habitat at the bottom of the west side of the hill where a petroglyph site is located (48FR3980). The drainage eventually feeds Miller Spring (48FR3309), which subsequently drains eastward into Beaver Creek several miles away, and Beaver Creek drains into the Wind River near Riverton, Wyoming, about 30 miles to the north and east. There are some scattered pine and mountain junipers on the hilltop, and west of the hill below the quarry (48FR3979) and above the petroglyph site (48FR3980). The lands to the west and north of the quarry site and petroglyph site are low rolling hills with a dry grass/sagebrush habitat. To the immediate south of Miller Spring is the hill with the two Native American cairns. Surface bone evidence at Miller Spring indicates buffalo were traditionally used at the site, and most likely a reason the hunter-gatherers used the riparian habitat.

The Onion Flats site (48FR760) is approximately one mile south of Twin Creek and two to three miles southeast of the Little Popo Agie River/Twin Creek Intersect, all of which is about four to five miles east of Red Canyon in the South Pass area of the Wind River Basin of west central Wyoming. The site is a sagebrush/dry rolling hills grasslands between two drainages, Twin Creek and the Onion Flats drainage. The site follows along a small outcrop of sandstone with shale down the center of the site east to west. The ground is mostly clay and sand, with the two most

abundant plants being cheatgrass and sagebrush. Noted animals are jackrabbit, pronghorn, and sage grouse, with the associated habitat. The small projectile points, dating from the Late Archaic through the Historic Period, found at the site indicate the taking of small game by users of the site. However, the finding of several manos and a large piece of a reworked metate suggest the site was also used for processing vegetative materials.

Research at several Great Basin Macro-Style pecked petroglyph sites, including Legend Rock (48HO4), in the Bighorn Basin, and similarly designed petroglyphs in the Wind River Basin (especially the South Pass Area/Twin Creek site (48FR93), indicates hunter-gatherer peoples 2,000 plus years ago used and traversed both basins. The similarities of pecked petroglyphs in both basins have led archaeologists to categorize the style as the "Dinwoody Style," or "Wind River Basin Style," (Gebhard 1969; Walker and Francis 1989). There apparently was a common provincial Native American bond between the two basins. Shoshone Spiritual Leader and Cultural Elder Starr Weed has stated the Wind River and Bighorn Basins were linguistically considered by his people as one valley before the advent of the whiteman in the area, and the establishing of the Wind River Indian Reservation (Starr Weed, personal communication, 1994).

Frison (1978:335-345) lists the Bighorn Basin as consisting of six major ecosystems: 1) desert-basin; 2) grassland; 3) foothill-scrub; 4) timbered mountain slopes; 5) alpine; and, 6) riparian stream bank communities. Galvan (1976) also lists "disturbed" areas, such as where a prehistoric group would have camped, trampled the ground and accidentally or deliberately cut into the surface.. A site such as Medicine Lodge Creek, where five of the six ecosystems are easily accessible by prehistoric man, allows for a very diverse food gathering and storage lifestyle, and enhanced probability of survival of the presumable subsistence level family unit (Galvan 1976).

The "Galvan Seasonal Group" concept was developed by Mary Elizabeth Galvan in a study concerning vegetative communities around the Medicine Lodge Creek site in the Bighorn Basin (Galvan 1976). She was attempting to show how modern vegetative communities can be related to prehistoric vegetative communities and the associated human interactions. The seasonal grouping emphasizes when a plant/shrub/tree was most likely to be available for harvesting traditionally, and helps create a more complete image of when and how a prehistoric Native American hunter-gatherer most likely used a site.

Thus the charred evidence of a Chenopod leaf, such as Lambs Quarters, could help point to the late spring to early summer use of a site. Seeds of the same plant would indicate late summer to early fall use, or possibly even seed storage and winter use. Consequently the combining of several different charred plant and seed macrofossils from an archaeological site may lead a paleobotanist to speculate, with some accuracy, the site was used by hunter-gatherer peoples within even one summer month or several weeks 10,000 years ago. The image becomes even more complete as one realizes members of an ancient family may have traveled extensively to collect seeds and plants from several ecoplanes. This could have created a single meal witnessed by the charred remains left in an ancient cooking pit being researched today.

The following vegetal listings include: 1) the common name, 2) the scientific name, 3) the Galvan Group (the season when they were most likely used and/or harvested), 4) Native American/archaeological sources, uses, and words, 5) botanical and historical use information.

AMARANTHS, *AMARANTHUS* SPP.

Galvan Food Group II: Late Summer to Early Fall. The group includes ripening fruits and seeds, depending on the specific plant.

Batson 1982:64-65. Amaranthaceae (Amaranth Family). *Amaranthus* L (Amaranth).

Frison 1978:341-42. Paleoindian storage pit deposits were found in the Schiffer Cave, a small dry rock shelter on the eastern slopes of the Bighorn Mountains, with *Helianthus* spp., *Opuntia* spp., *Amaranthus* spp., *Prunus* spp., *Pinus spp.*, and *Juniperus* spp. among the charred seeds recovered. Frison (1978:336): The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including Amaranths (*Amaranthus* sp.) (Galvan 1976).

C. Fowler (1986:69-70). Use of seeds and leaves by Gosiutes, Southern Paiutes, Kawaiisu, and Western Shoshones.

Hamel and Chiltoskey (1975:23). Leaves are used to relieve profuse menstruation; astringent; and ingrediaent in a green corn medicine.

Harrington (1967: 57-60). *Amaranthus retroflexus* (*A. powellii*) Pigweed, Redroot, Careless Weed: A favorite among Indians who parched the small black seeds and ate them whole. They were also ground into a meal, often mixed with corn meal, and used in making bread, cakes, mush, or gruel. Soaking the seeds or meal overnight in water is a good idea. The seeds have been known to be eaten raw. The young shoots and stems were cooked like spinach. Also includes other related species of the amaranths (*A. palmeri, A. torreyi, A. hybridus*). Harrington (1967:64) also suggests the mixing of *Amaranthus retroflexus* with *Chenopodium* spp. and Mustard (*Brassica nigra*) leaves in salads or when cooked like spinach.

Moore (1979:24). Medicinal uses: "Dried Amaranth leaves are a pleasant, mild astringent for the mucus

membranes. A strong tea can be drunk every several hours for stomach and intestinal problems. Other uses: The grain seeds can be gathered when there is a pronounced reddening of the stems. The young leaves are an excellent potherb."

Niethammer (1974:118). Pigweed *Amaranthus palmeril* and *A. retroflexus* was used by the Pimas, Hopis, Papagos, Havasupais, and other Yuman tribes. The young leaves are mild before flowering. The tiny black seeds can be harvested after flowering and the stem is dried. The Yuman tribes cultivated pigweed by tying the plant heads together to protect the seeds from wind, etc. They also cut the plants early and stored the plants indoors to get as many seeds as possible. The seeds were parched with coals in a shallow dish opening the white insides. The roasted seeds were ground into flour for bread or mush. The greens are boiled in shallow amount of water for 5-10 minutes.

Scott-Cummings (1991). Flora associated with Late Prehistoric Period features dating 1060-1610 BP, included: *Aramanthus* sp. (seed), *Aronia* sp. Chokeberry (seeds), *Chenopodium* sp. (seeds), Leguminosae (seeds), *Corispermum* sp. (seeds), and unidentified berry and seed fragments, Salicaceace (*Salix* sp. and *Populus* sp.) (buds and charcoal), *Pinus* sp. Pine (buds and charcoal), *Artemisia* spp. Sagebrush (charcoal), *Purshia* sp, Antelope Brush (charcoal). Amaranths were exploited both for their greens, as a potherb, and their seeds. "The seeds are usually noted to have been parched prior to grinding."

Yanovsky (1936:237, 23). *Amaranthus blitoides.* Amaranth: Eaten as potherb, seeds used for pinole, also dried for future use; Montana to New Mexico. *Amaranthus retroflexus* L:, Seeds boiled or dried by Tewa of New Mexico, used for pinole in California, leaves eaten by Iroquois Indians. *Amaranthus powelli* and *Amaranthus* sp. Bread made from meal of ground seeds in Utah.

ANTELOPE BRUSH, ANTELOPE BITTERBRUSH, *PURSHIA SPP.*

Batson (1982:94). *Purshia* DC (*Kunzia, Tigares*) (Antelope Brush).

Scott-Cummings (1991). Flora associated with Late Prehistoric Period features dating 1060-1610 BP, included: *Purshia* Antelope Brush, Antelope Bitterbrush (charcoal), *Aramanthus* sp. (seed), *Aronia* sp. Chokeberry (seeds), *Chenopodium* sp. (seeds), Leguminosae (seeds), *Corispermum* sp. (seeds), and unidentified berry and seed fragments, Salicaceace (*Salix* sp. and *Populus* sp. (buds and charcoal), *Pinus* sp. Pine (buds and charcoal), *Artemisia* sp. Sagebrush (charcoal). Antelope brush roots, inner bark, roots, leaves, seeds, and fruit were used medicinally as a tea. Boiled as an emetic and strong laxative., and considered a venereal disease remedy, and for menstrual cramps. The Navajos used it as an emetic, for fevers, and in ceremonies (Vestal 1952:31). The Paiutes used the twigs and leaves colds, skin problems, and emetic. The seeds and berries were noted for use as laxatives and hemorrhaging, and an emetic (Moerman 1986:383-384).

Scott-Cummings et al. (2001). Antelope Brush *Purshia,* (pollen) was included at 48FR3091, 48FR3092, 48FR3243 Middle Archaic; 48FR3243 Late Prehistoric.

APIACEAE

Scott-Cummings et al. 2001. This plant included in 48FR3092 Early Archaic; 48FR3242, 48FR3243 Middle Archaic; 48FR3243, 48FR3244, 48FR3245 Late Prehistoric.

ARROWROOT, *BALSAMORHIZA SAGITTATA*

Galvan Food Group I. Spring and Early Summer. Group includes greens, roots, and bulbs depending on the plant.

Frison (1978:341-42). Paleoindian storage pit deposits were found in the Schiffer Cave, a small dry rock shelter on the eastern slopes of the Bighorn Mountains, with *Helianthus, Opuntia, Amaranthus, Prunus, Pinus,* and *Juniperus* among the charred seeds recovered., pages 336, 338. The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including arrowroot *Balsamoriza sagittata* (Galvan 1976).

C. Fowler (1986:71). Also known as balsamroot. Use of roots, seeds, and young leaves: Eastern Shoshone, Washoe, Northern Paiutes, Gosiutes, Southern Paiutes, Western Shoshones, and Northern Utes.

Shimkin (1947:272). Shoshone word **d' ya' xaya'han'**, Basin Shoshones used seeds, eaten **(kusuak).**

QUAKING ASPEN, COTTONWOOD, *POPULUS*, SALICACEACE (*SALIX* AND *POPULUS*)

Scott-Cummings (1991). Flora associated with Late Prehistoric Period features dating 1060-1610 BP, included: *Aramanthus* sp. (seed), *Aronia* sp. Chokeberry (seeds), *Chenopodium* sp. (seeds), Leguminosae (seeds), *Corispermum* sp. (seeds), and unidentified berry and seed fragments, Salicaceace (*Salix* sp. and *Populus* sp.) (buds and charcoal), *Pinus* sp. Pine (buds and charcoal), *Artemisia* sp. Sagebrush (charcoal), *Purshia* sp. Antelope Brush (charcoal). Amaranths were exploited both for their greens, as a potherb, and their seeds. "The seeds are usually noted to have been parched prior to grinding."

Yanovsky (1936:16). Quaking Aspen *Populus tremuloides,* Inner bark and sap of tree used in Northwest, Montana to British Columbia. *Sargent* Cottonwood. *Populus sargentii,* Young sprouts and inner bark used in Nebraska and Dakotas.

ASTERACEAE, (POLLEN, SEEDS)

Batson (1982:172). *Aster* L. *Brachyactes*

Scott-Cummings et al. (2001). This plant included at 48FR3092 Late Archaic; 48FR3092, 48FR3243, 48FR3244, 48FR3245 Late Prehistoric.

BEEPLANT, *CLEOME* SPP.

Galvan Food Group I: Spring and Early Summer. Group includes greens, roots, and bulbs depending on the plant.

Batson (1982:75). *Cleome* (Spider-flower).

Frison (1978:3413-42). Paleoindian storage pit deposits were found in the Schiffer Cave, a small dry rock shelter on the eastern slopes of the Bighorn Mountains, with *Helianthus* sp., *Opuntia* sp., *Amaranthus* sp., *Prunus* sp., *Pinus sp.,* and *Juniperus* sp. among the charred seeds recovered. Page 336, The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including bee flower *Cleome* spp. (Galvan 1976).

D. Fowler1965:82-88; 159-161. *Cleome serrulata,* Honey Plant, bulb eaten.

Harrington (1967:72). *Cleome serrulata, G. inornata, Peritoma serrulatum*: Beeplant, Spiderflower, Clammy Weed. Indian potherb: the tender shoots and leaves were used. Older plants particularly have an unpleasant smell, and cooking water needs to be changed 2-3 times. Indians boiled the plant for a long time, removed the stems, and boiled remainder until blackish, thick residue remained. This was used as a black paint or dye. Sometimes it was left to dry in sheets, and used as a preserved food. The boiled shoots sometimes were rolled into balls and dried for storage. The seeds were ground into a meal for gruel or making bread. The Navaho used two large ears of corn with 3/4 cup of Beeplant seeds finely ground and molded into cakes which were baked.

Niethammer (1974:104-105). The Zunis, Hopis, and Navajos store dried leaves for winter use. The young plants are collected in July before flowering. The Navajos made a stew with beeweed, wild onions, wild celery, and meat. It was also boiled with corn. The flowers were boiled with a piece of rusty iron for a drink to cure anemia. Crushed leaves were placed on swollen areas to reduce inflammation from insect bites as a poultice. Finely ground beeweed was mixed with water for stomach disorders, or the fresh plant wrapped in cloth and applied to the abdomen.

Scott-Cummings et al. (2001). This plant included (pollen) a: 48FR3091, 48FR3092, 48FR3243, 48FR3244, 48FR3245.

Shimkin 1947:272. Shoshone word **bitoniap**. Used as medicine by Gosiute.

Smith (1989:D9). Small amounts of beeweed seeds occurred in three components of the Buffalo Hump Site, and were the most common taxon in one component. The plant flowers in July and August, and occurs throughout most of Southwestern Wyoming. The leaves and flowers were commonly used as potherb (Yanovsky 1936). The seeds are also gathered and eaten (Elmore 1944), and were ground into a meal for baking bread by the Isleta Indians of New Mexico (Castetter 1935). Other Wyoming sites include 48CR3495 in the Red Desert (Sender et al. 1982) and the Taliaferro Site in the Green River Basin (Smith 1986).

Yanovsky (1936:28). *Cleome serrulata.* Boiled leaves and flowers used in New Mexico and Arizona.

BITTERROOT, *LEWISIA REDIVIVA*,

Galvan Food Group I: Spring and Early Summer. Group includes greens, roots, and bulbs depending on the plant.

Frison (1978:336). The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including bitterroot *Lewisia rediviva* (Galvan 1976).

Mary Harris, Notes, 1994. Bitterroot, Shoshone word **ganah**.

Dickie Moss, Notes, 1994. Bitterroot, Arapaho word **3eiciíí.**

C. Fowler (1986:69). The Camas (*Lewisis rediviva*) was common in the Columbia Plateau, and collected in the spring by the Northern Paiute, Bannock, and Northern Shoshone, who used curved digging sticks with handles (Steward 1943:363).

Harrington (1967:182). Bitterroot, *Lewisia rediviva*: A single ounce of dried roots of the bitterroot plant is sufficient for a meal. The roots are dug in Spring when the plants are in flower. During Spring the outer rind of the root can then be slipped off thus removing much of the bitter portion.

Oldman (2001). Bitterroot, Arapaho word **wooxucoo'** translates as "does not taste good."

U.S. Department of Agriculture, Forest Service (1988:414). Bitterroot was called **spatlum** by the Flatheads and Shoshoni (Snakes). The roots, which formerly were important in the dietary of the Indians are still used to considerable extent. The early explorer Geyer wrote: "The root is dug during flower-time, then the cuticle is easily removed; by that it acquires a white

color, is brittle, and by transportation broken to small pieces. Before boiling it becomes five to six times larger in size; resembling a jelly like substance. As it is so small a root, it requires much labor to gather a sack, which commands generally the price of a good horse. Indians from the lower regions trade in the root by handfuls, paying a high price." And Granville Stuart states: 'It is very nutritious, but has an exceedingly bitter taste, hence its name. I never could eat it unless very hungry, but many mountaineers are very fond of it."

Yanovsky (1936:24). Bitterroot, *Lewisia rediviva*, "**Spatulum** or '**Chitah**' of Indians." The bitter but nutritious roots are a very important article of Indian diet, the bitterness being eliminated on cooking; the roots are also boiled to a pink jelly; Western States from Rocky Mountains to Pacific Ocean.

BORAGE BORAGO L. *BORAGINACEAE*

Batson 1982:141). *Borago* L. (Borage)

Scott-Cummings et al (2001). Boraginaceae, (seed/ embryo) was found at 48FR3092 and 48FR3243.

BUFFALOBERRY, *SHEPERDIA ARGENTEA*

Galvan Food Group II: Late Summer to Early Fall. The group includes ripening fruits and seeds, depending on the specific plant.

Galvan Food Group III: Winter. Fruits and seeds remain on the plants for at least part of the Winter.

C. Fowler (1986:69). Buckberry, *Shepherdia argentia.* The Northern Paiute of Western Nevada made large seed beater sieve baskets for seeding and pulping of the Buckberry and wolfberry (*Lycium andersonii*).

Frison (1978:338-339). The Leigh Cave Site is a small rock shelter of the McKean Complex, from the Early and Middle Plains Archaic periods, with dry deposits, at an elevation of 5,600 feet, in the Bighorn Basin, indicating intensive use of the wild onion and Mormon cricket, with roasting pits. Besides the wild onion, nine other usable plants were present: buffaloberry, prickly pear, chokecherry, thistle, juniper, limber pine, wild rose, wild rye, and yucca. Frison (1978:336): The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including Buffaloberry *Shepherdia argentea* (Galvan 1976).

Gilmore (1977:54). *Lepargyrea argentea* (Nutt.) Green. Buffalo-berry. **Mashti'cha-pute** (Dakota), "rabbit-nose" (**mashti'cha**, rabbit; **pute**, nose). **Zho'-hoje-wazhide** (Omaha-Ponca), or **wazhide huta**, gray **wazhide. Haz-shutz** (Winnebago), "red-fruit" (**huz**, fruit; **shutz**, red), **Laritsits** (Pawnee). The berry was used fresh in season, and dried for winter use. "The fruit was ceremonially used in feasts given in honor of a girl arriving at puberty. *Padus nana* (Chokecherry) was ordinarily used , but *Lepargyrea* might be substituted. This was a custom among the Dakota."

Guernsey (1989:133, 148). Two seeds recovered in Stratum No. 1. Berries commonly used by Indians raw or dried for storage (Harrington 1967). The plants mature late summer to early fall, and are usually found in riparian environments, and is found growing in the immediate area of 48HO4.

Harrington (1967:282-285). Buffaloberry, *Sheperdia argentea (Lepargyraea argentea).* A shrub or small tree. The red berries are eaten raw, cooked into a sauce which is used to flavor buffalo meat, or dried for winter use. The raw fruits are thought to be sweeter and less acid after frost. Related Species: *Shepherdia canadensis*: bitter buffaloberry, russet buffaloberry, or soap berry.

Harris (1994). Buffal berry, Shoshone word **Ainkoambi.**

Moss (1994). Buffaloberry, Arapaho word **bee'ei'i.**

Oldman (2001). Buffaloberry, Bull Berry, Arapaho words **hooxeehib, hooxeehibino**, translates as "no" ending = many. Alvena (Willow) remembers her Mother collected Buffaloberries and dried them for winter use, for making gravy.

Scott-Cummings et al. (2001). *Shepherdia,* (pollen) was found at 48FR3091, Middle Archaic.

Steward (1938:29). *Shepherdia argentia,* called **biawiyumbi**, Shoshone, Elko, Nevada, berry eaten; Gosiute also ate it. (Chamberlain 1911:75)

U.S. Department of Agriculture, Forest Service (1988:694). "(Buffaloberries) . . . were extensively gathered by Indians and pioneers who preserved them by drying."

Walker et al. (1977:27). Buffaloberry, berry eaten (Steward 1938:29).

BULRUSH, *SCIRPUS* SPP.

Galvan Food Group I: Late Spring to Early Summer;

Galvan Food Group II: Late Summer to Early Fall. Group includes greens, roots, bulbs, and seeds depending on the plant.

Batson(1982). Cyperaceae (Sedge Family) *Scirpus* L. (Bulrush); *Schoenus* L. (Black Sedge); *Carex* L (Sedge); *Carex kobresia* Willd; *Cyperus* L. (Nut-grass); *Dulichium* Rich; *Eleocharis* R. Br. (Spike Rush); *Rhynochospora* Vahl. (Beak Rush) *Bulbostylis* Kunth; Schoenus; (*Caladium* R. Rr Sawgrass); *Hemicarpha* Nees. & Arn (Scirpus); *Eriophorum* (Cotton-Grass); *Fimbristylis* Vahl.

Densmore (1974:69, 293). Chippewa **ana'kun**, utility food. (Gilmore 1977:69.)

C. Fowler (1986:69). Alkali Bulrush, *Scirpus pallidus)* Use of grinding tools.

Guernsey (1989:144). One *Scirpus* sp. (bulrush) seed found in Stratum No. 2. The riparian plant's roots and seeds are

edible, and mature during late summer and early fall. The roots can be eaten raw, cooked, dried, or dried and ground into flour. The seeds can be parched and ground into flour. The young shoots are edible. Also used as a weaving and mat material source. (Blankenship 1905; Yanovsky 1936; Rogers 1980). (Guernsey 1989:148) *Scirpus* sp. is a riparian species currently growing in the 48HO4 area.

Hamel and Chiltoskey (1975:27). "Deccoction as emetic; ingredient in medicine for spoiled saliva."

Harrington (1967:210). Bulrush, *Scirpus* sp. in the spring, Indians gathered the young shoots and ate them raw or cooked. When the bulrush was in flower, the pollen was collected and mixed with ground meals to make bread, mush, and pancakes. In the fall, there is a new growth of shoots. The old stems were used to weave into mats or baskets. The scaly rootstocks were available all seasons of the year, and were eaten raw or cooked. When the roots were thoroughly sun dried, they were pounded into a flour. Related Species: *Scirpus validus; S. pallidus.*)

Scott-Cummings et al. (2001). *Scirpus* seeds were recovered at 48FR3091, Middle Archaic, 48FR3243 Late Archaic, 48FR3092, 48FR3244, 48FR3245 Late Prehistoric.

Yanovsky (1936:10). Tule *Scirpus aceutus,* Great Bulrush *Scripus validus* Vahl. Rootstocks eaten raw, or pounded into flour for making bread; pollen of the plant also used to make bread. Seeds also used as food, young shoots eaten in spring.

CACTACEAE, (AREOLE, FRUIT, GLOCHID, SPINE)

Scott-Cummings et al. (2001). This plant included at (48FR3091, 48FR3243 Middle Archaic; 48FR3092, 48FR3243 Late Archaic; 48FR3092, 48FR3243, 48FR3244, 48FR3245 Late Prehistoric.

WILD CARROT, *DAUCUS* SPP.; *COGSWELLIA* SPP.; *LOMATIUM* SPP.; *PEUCEDANUM* SPP.

From a large variable genus of the carrot or parsnip family (Umbelliferae).

D. Fowler (1965:82-88, 153, 159-161). *Cogswellia ambigua,* "Tuber," roots eaten. found on the foothills and ridges into the Montane Zone, 5,000-7,000 feet elevation.

Harris (1994). Wild Carrot, Shoshone word **yainbah.**

U.S. Department of Agriculture, Forest Service (1988:329-332). "Many biscuit roots were important food plants of the Indians. The leafage of some species was eaten raw, baked, or roasted, or dried and ground into flour for bread; hence the name biscuitroot. Cous, above referred to , also known as cousroot andbiscuit root, and some of its close relatives, was one of thel eading foods of the Northwestern Indians. The fresh roots have a parsnip-like flavor, but, on drying becomes brittle and white, with a somewhat celery-like taste. The dry root is readily ground into flour."

CATTAIL, *TYPHA LATIFOLIA* L.

Galvan Food Group I: Late Spring to Early Summer;

Galvan Food Group II: Late Summer to Early Fall. Group includes greens, roots, bulbs, and seeds depending on the plant.

Batson (1982:14). Typhaceae L. Cattail

C. Fowler (1986:69). Use of fruits: The seeds of both the cattail (Typha latifolia) and Indian ricegrass (Oryzopsis) had to be flash burned to remove unwanted chaff.

D. Fowler (1965:82-88, 159-161). *Typha* spp, Cattail, seeds and roots eaten.

Gilmore (1977:12-13). Wihuta-hu (Dakota); **wihuta**, "the bottom of a tipi" (**hu**, plant body, herb, shrub, or tree; in a Dakota plant name **hu** signifies "plant" as does **hi** in the Omaha language. **Wahab' igaskonthe** (Omaha-Ponca); **wahaba**, corn; **igaskonthe**, similar, referring to the appearance of the floral spikes synchronously with the maturing of the corn. **Ksho-hi'** (Winnebago); **hsho**, prairie chicken, **hi**, feather. The plucked down resembles in color and texture the finer feathers of the prairie chicken. **Hawahawa** (Pawnee). **Kirit-tacharush** (Pawnee), "eye itch" (**kirit**, eye; **tacharush**, itch); so named because the flying down causes itching if the eyes. The down was used to make dressings for burns and scalds; on infants, to prevent chafing, as we use talcum; and as a filling for pillows , cradle board padding, and baby wrap quilting. Parts of the stem were used for ceremonies of the Omaha and Ponca known as **niniba weawane** in the Wawan Ceremony. When a baby was to be born the family women gathered a great quantity of *Typha* down and laid the newborn infant in it. That which adhered to the baby after drying, the mother removed after moistening with breast milk. The down was also used much like current use of a baby diaper.

Harrington (1967:220-224). Cattail, *Typha latifolia* L. "Probably most famous of edible plants, and a favorite of Indians." In the Spring, the young shoots are eaten raw or in salads. They can be boiled and in Russia are called "Cossack asparagus." Young shoots continue to grow during the summer and fall. The young flower spikes can be taken out of the sheaths and cooked several ways. They can be boiled for about 20 minutes and eaten like corn roasting ears. When the plant is more mature, but the pollen has not shed, the pollen producing flower can be used to make f flour for muffins, biscuits, pancakes, etc., particularly when mixed equally with wheat flour. The cakes can be sun dried and preserved and stored for future use. The pollen can be collected and also used as a flour. After the cattail tops have turned brown, in the fall, then the rootstocks are available as food. Young rootstocks are best, and the outer peel must be removed.

The inner white core is high in starch content and may be eaten raw, but are best baked or boiled. The end of young rootstocks has a lump of starchy material that can be dried and made into flour. Related Species: Typha angustifolia; the narrow-leaf cattail.

Harris (1994). Cattail, Shoshone word **sipeh.**

Niethammer (1974:88-92). A veritable food factory for Indians and pioneers. "The roots, the root-shoots, the tips of the new leaves, the inner layers of the stalk, the green bloom spikes, the pollen, and the seeds are all edible." The young leaf shoots in the spring are like asparagus, but also can be eaten raw. The green bloom spikes appear in the summer and can be boiled for 10 minutes and eaten. When the spikes develop pollen, it can be rubbed or shaken off for baking like flour. The Yumans made a mush from the pollen. The stalk can be boiled: discard the outer 3-4 rings of stalk, and boil about 10 minutes. Cattail roots were pounded and mixed with fat for a burn salve.

Scott-Cummings et al. (2001). *Typha* seeds were recovered at 48FR3092 Late Archaic; 48FR3092, 48FR3243, 48FR3244,48FR3245 Late Prehistoric.

Steward (1938:30). *Typha,* Cattail, Rush. Called **doi, toi,** and **to'i,** by various Nevada Shoshone. The brown seed head was burned to secure seeds, roots were dried and then ground and stored. Also eaten by the Gosiute (Chamberlain 1911:77).

Yanovsky (1936:6). *Typha latifolia* L. Cattail, young roots, shoots, bases of stems, flowering ends, seeds eaten by variety of tribes.

CERCOCARPUS SPP.

Scott-Cummings et al. (2001). Pollen from this plant was recovered at 48FR3243 and 48FR3245 Late Prehistoric.

CHOKEBERRY *ARONIA*

Scott-Cummings (1991). Flora associated with Late Prehistoric Period features dating 1060-1610 BP, included: *Aronia* Chokeberry (seeds), *Aramanthus* (seed), *Chenopodium* (seeds), Leguminosae (seeds), *Corispermum* (seeds), and unidentified berry and seed fragments, Salicaceace (*Salix* and *Populus*) (buds and charcoal), *Pinus* Pine (buds and charcoal), *Artemisia* Sagebrush (charcoal), *Purshia* Antelope Brush (charcoal).

CHOKECHERRY, *PRUNUS VIRGINIANA*

Galvan Food Group II: Late Summer to Early Fall.

Found currently at Onion Flats 48FR760; Sinks Canyon 48FR2498; Foster Draw 48FR2458; Little Popo Agie No. 1 48FR2506.

Densmore (1974:291). Chippewa **a'sisuwe'minaga'wunj.**

Frison (1978:338-39). The Leigh Cave Site is a small rock shelter of the McKean Complex, from the Early and Middle Plains Archaic periods, with dry deposits, at an elevation of 5,600 feet, in the Bighorn Basin, indicating intensive use of the wild onion and Mormon cricket, with roasting pits. Besides the wild onion, nine other usable plants were present: buffaloberry, prickly pear, chokecherry, thistle, juniper, limber pine, wild rose, wild rye, and yucca. Frison (1978:336): The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including Chokecherry *Prunus virginianus.* (Galvan 1976).

C. Fowler (1986:78). Use of fruits: Eastern Shoshone, Washoe, Northern Paiutes, Gosiutes, Utah Southern Paiutes, Western Shoshones, Kawaiisu, and Northern Utes. Several groups pulverized chokecherries (*Prunus virginiana*) on the metate and then formed small cakes of the pulp that were sun dried, and stored in pits and bags.

D. Fowler (1965:82-88, 159-161). *Prunus melanoccarpa,* Chokecherry, for making bows arrows.

Gilmore (1977:36-37). Padus Nana (Du Roi) Roemer. Chokecherry. **Cha'pa** (Dakota). **No'pa-zhinga** (Omaha-Ponca), "little cherry," (**no'pa**, cherry). **Nahaapi nakaaruts** (Pawnee); **nakaaruts**, cherry; **nahaapi**, tree. The chokecherry is esteemed by all tribes as a food, and under certain circumstances associated with ceremonies. The Dakota set the time of the Sun Dance by the ripening of the cherries, as with the first day of the full moon. They call the month **Ca'pa-sapa-wi**, "The-Month-When-the-Cherries-Are-Ripe": literally "black-cherry-month." The fruit is eaten fresh, or pounded into a mash as a pemmican that was sun dried as small cakes. The cakes were then reconstituted with hot water. The Ponca used the bark or fine ground dried cherries infused in water as a cure for diarrhea.

Hamel and Chiltoskey (1975:28). "(*P. virginiana*) "Bark tea for fever; fresh bark decoction for the 'great chill,' ague; warm tea at first pains of labor; bark decoction with the white alder to break fever; bark tea for cough and colds; with barks of spcicewood and flowering dogwood added to corn whiskey to break out measles; with alder, rattlesnake plantian, wild ginger and yellowroot to make a blood tonic; bark te for 'thrash'; decoction of inner bark for lsot voice; one of six ingredients in steam bath for indigestion or biliousness with swelling of abdomen and yellow sskin; astringent; bark of root makes a wash for old sores and ulcers; boil fruit for blood discharged from bowels; fruit used as food."

Harrington (1967:256-262). Chokecherry, *Prunus virginanus*, eaten raw and dried. The ripe fruit was often ground up, pits and all, and sun dried into cakes and stored for later use. They can then be mixed with water, flour, and sugar to make a sauce. The Indians would

often mix this dried fruit with dried meat and fat to manufacture pemmican. The leaves are sometimes used as a tobacco. the bark was used to make baskets.

Harris (1994). Chokecherry, Shoshone word **tonrambi.**

Mionynski (1987; 1998). Chokecherry is in the Rose Family. The berries store nitrillicide which is combination of sugar and cyanide. The cyanide is also found in apple seeds and almond seeds. All three, including chokecherry bark can be used against sore throats. The chemical as vitamin B 17 has been used as a prevention of cancer under the name of Laitril which has a worldwide success rate of 80 percent. The nitrillicide transforms into thiocynatic transulfurage, which kills the cancer cells. A person can eat a half cup of apple seeds for same results. The chemical lowers blood pressure, counters bacterial infections, cures sore throats, is a disinfectant. Young leaves are dangerous can create cyanide poisoning.

Moss (1994). Chokecherry, Arapaho word **biino.**

Niethammer (1974:58-60). *Prunus serotina*, var. *virens*. The Jicarrilla Apaches ground the berries into a meal and made into round cakes about six inches in diameter and one inch thick. Once hard, the blackish patties were stored, and reconstituted by boiling or soaking in water. The seeds contain volatile cyanide which is driven off by cooking. Some Indians made a jam by cooking the fruit with honey. A tea can be made from the inner bark of the branch and used as a remedy for diarrhea. The Pueblo Indians collected roots in September and boiled them with brown sugar into a tea for inflammation of the stomach, and rheumatism. The tea could be used as a bath also for rheumatism.

Oldman (2001). Chokecherry, Arapaho word, **Biino** (berry). Chokecherries are used for food, medicine, and in ceremonies by Arapahos. Chokecherries are picked in the Fall, around late July and August. Chokecherries are picked for food for the winter. In earlier years they were crushed. People used flat rocks to crush them, but the modern generation uses hand grinders or electric blenders. The older people crushed chokecherries and made the paste into patties, much like a hamburger patty, and then dried it. After the patties were dried, they are put away in containers, or old flour sacks to be used for gravies. Now days chokecherries are put in containers and frozen. Gravy = **biineeek**, (berry gravy), Chokecherry bark is used for medicine.

Shimkin (1947:275). *Prunus*, Shoshone word **d'ngisap** or **to:namp**, used for bows and quivers.

Scott-Cummings et al (2001). *Prunus,* (pollen) was recovered from 48FR3091, 48FR3092, 48FR3243 Middle Archaic; 48FR3243 Late Prehistoric.

Steward (1938:28). *Prunus*, Chokecherry or wild cherry. Called **donambi**, **tonumbi**, **tonump**, and **do:nambe**, by various Nevada Shoshone tribes. The Lemhi Shoshone and elsewhere pounded the cherries on a metate to mash the seeds, squeezed out the juice, and dried and stored the pulp, seeds included.

U.S. Department of Agriculture, Forest Service (1988:728). "The (choke cherry) fruit is commonly used locally for jellies and jams, and occasionally wine."

Wedel (1961:252). "Chokecherries and other berries were pounded up and dried, but not as among the Plains tribes, mixed with meat."

Yanovsky (1936:33). *Prunus virginiana* Common Chokecherry. Fruit eaten fresh and dried and used for pemmican; bark and twigs used as substitute for tea; Nebraska, Dakotas.

COCKLEBUR *XANTHIUM*

Batson (1982:189). *Xanthium* L. (cocklebur).

Hamel and Chiltoskey (1975:29). *X. spinosum,* cocklebur. "Bur tea to unstick object in throat; for cramps; chew roots for rattlesnake bite; root tea is emetic; tea for croup."

Scott-Cummings et al. (2001). *Xanthium* (fruit/bar, seed, spine) were recovered at 48FR3091,48FR 3092, 48FR3242 Middle Archaic; 48FR3292, 48FR3243, 48FR3244 Late Prehistoric.

CORISPERMUM

Scott-Cummings (1991). Flora associated with Late Prehistoric Period features dating 1060-1610 BP, included: *Corispermum* sp. (seeds), Leguminosae (seeds), *Aronia* sp. Chokeberry (seeds), *Amaranthus* sp. (seed), *Chenopodium* sp. (seeds), and unidentified berry and seed fragments, Salicaceace (*Salix* sp. and *Populus* sp.) (buds and charcoal), *Pinus* sp. Pine (buds and charcoal), *Artemisia* spp. Sagebrush (charcoal), *Purshia* sp.Antelope Brush (charcoal).

CURRENT, *RIBES SP.*

Forms of this species are currently found at Miller Spring 48FR3309, and Sinks Canyon 48FR2498.

D. Fowler (1965:82-88, 161). *Ribes cereum* and *R. inebrians,* Current, for making arrows.

Hamel and Chiltoskey (1975:360). *R. rotundifolium* (Gooseberry). "Tea for measles; bark tea to check bowels; leaf tea for nerves."

Mionynski (1987; 1998). Squaw Brush. The berries are high in vitamin C. Berries are orange/red, and taste like lemon aide.

Niethammer (1974:61-62). Wax currant, wild gooseberry, squaw currant, and bear currant. *Ribes inebrains* and *Ribes cereum*, Often found at the base of cliffs, The berries appear from June to August, are bright red and smooth. The berries are not very juicy. The Hopi noted eating too many currants would make a person sick.

Raw they are an emetic, but there is no problem if they are cooked. The berries were often dried for winter use. The Zunis ate the young tender leaves in the spring time raw with animal fat. The Hopis used the berries of the *R. cereum* for relief of stomachache. The wood for arrows.

Oldman (2001). Currents, Arapaho word **ne'ibino** translates to "are berries," Fresh berries are used to make gravy.. Squawberry: Arapaho word **bee'ei'** translaes as "bush with lots of berries." Have same uses as chokecherries

Scott-Cummings et al. (2001). *Ribes*, (seeds) were recovered at 48FR3244 Late Prehistoric.

Steward (1938: 29). *Ribes aureum*, golden or black current. Called **bogombi** and **bo:gumbi** by various Nevada Shoshone tribes. The berries were dried and stored.

U.S. Department of Agriculture, Forest Service (1988:760). "The small bright red berries (of the Wax Current) are sometimes used by Indians, but are not well flavored; however, they are extensively consumed by birds and rodents." The Sticky current is probably the most valuable as a fall animal forage (p. 764). This species, currently is found at 48FR2498 in Sinks Canyon near several rock shelters and petroglyph sites.

Yanovsky (1936:29). *Ribes lacustre* Prickly Current, Berries eaten fresh or dried, Utah, Wyoming, Montana, and Alaska. *Ribes inebrians*, Squaw Current, Berries eaten fresh or dried or crushed and pressed into cakes and dried; used for making intoxicating beverages; leaves eaten with mutton or deer fat; New Mexico and Cheyenne Indians. *Ribes cereum*, Wax Current, Berries used.

YELLOW OR CURLY DOCK, *RUMEX* SP.

Galvan Food Group I: Late Spring to Early Summer.

Galvan Food Group II: Late Summer to Early Fall.

Galvan Food Group III: Winter. Groups include greens, roots, and seeds depending on the plant and season.

Densmore (1974). Yellow Dock; Chippewa **ginoje'wukun**, medicine (eruptions).

C. Fowler (1986:77). *Rumex crispus*, seeds, stems, leaves used by Owens Valley Paiute, Nevada Northern Piaute, Panamint, Western Shoshone, Kawaiisu, Northern Ute.

Guernsey (1989: 131, 133-134). Uncharred seeds found in features.

Harrington (1967:90). *Rumex crispus*; Curly dock, Sour Dock. In the Spring, the leaves are tender and free of insect holes, and a second crop of young leaves may occur in the Fall, especially after a particularly after a rain. The coarse leaves become tender after boiling about 10 minutes, like spinach. It is advised to change the cooking water several times. The tender leaves may be eaten raw. The Indians used the plant as a tobacco substitute, and the plant is often called "Indian Tobacco." The seeds were also ground into a meal for breads and mush, and proved a good winter food source for humans and birds because it often sticks well out of the snow and easy to see. There are many related species, some with strong tastes.

Hamel and Chiltoskey (1975:32). "Root tea to correct fluids; bruised root tea for poultice for old sores, ulcers, and hard tumors; salve for eruptions and itch of skin; tea for dysentery and bowel complaints; juice for ringworm or tetterworm; drink root tea for blood; rub leaves in mouth for sore throat; feed beaten roots to horse with sick stomach; root tea for constipation."

Niethammer (1974:108). The young dock leaves can be boiled as greens, but with several changes of water. The mashed roots were used as a poultice on sores and swellings. The Rio Grande Valley Indians used the mashed leaves as a poultice on the forehead for headaches.

Mionynski (1987; 1998). *Rumex crispus*, also known as Indian tobacco. Dark yellow or orange root used to stimulate bile production. Helps break down and remove fat from the liver along with toxins stored in the fat in the liver. Allergies are often related to the toxins built up in the liver such as DDT which creates then nose allergies, thus yellow dock can reduce the fats holding the toxins and thus reduce allergy reactions. However, the process can be dangerous. If all of the toxins are released at the same time they can poison the body that has stored them. Chrysophanic Acid is the active ingredient in the plant which is stored in the yellow/ orange of the root. Do not collect the roots from next to highways or pollutants, because they will store them. Do not collect from a wet or drainage environment, but from a dry area. Older plants in dry areas collect and store the acid year to year. Curly dock leaves are poisonous, but can be used in making cheese. Can store in sections, in dark place, can freeze. The root is boiled and made into a tea. Three quarts of water to a handful of diagonal root chips. Takes three days to break out in hives which indicates the release of the poisons. Too much will act as a laxative. Reduce the amount for headaches. Use in smaller amounts when fasting.

Moore (1979:164-66). Plants growing in direct water are useless, those plants found in drier spring meadows are preferred. The darker the yellow, the stronger the root. The active ingredients are chrysophanic acid and emodin, as well as tannin. Pick in October and November. Its primary uses are for treating constipation, blood disorders, skin diseases, rheumatism, and indigestion (poor digestion of meat and dairy and fatty foods). Tea drunk three times a day is a mild laxative and a remedy for skin disorders due to internal toxicity or nervousness. Yellow Dock root tea is more effective when mixed with roots of Burdock, sarsaparilla, and/or echinacea, especially for eruptions on oily skin of neck

and back. The plant can be used externally on skin eruptions and poor healing abrasions.

Steward (1938:29). *Rumex crispus*, dock. Steward considers this plant, "... introduced from Europe." Called **pauwiya** or **tumu**, Shoshone, Elko, Nevada, Shoshone Ruby Valley, seeds eaten; Shoshone Lida, Nevada, leached seeds in cold water; this is among the few instances of leaching plants other than acorns. Also used as a medicinal plant. (Chamberlain 1911:75).

Shimkin (1947:274). Shoshone word **d ya:'cu**, boiled and drunk for stomach ache.

Walker et al. (1977:27). Dock, dyes made from various kinds (Grinnell 1972:172), seeds leached, then eaten (Steward 1933:29).

Yanovsky (1936:21). Curly Dock *Rumex crispus*, Leaves used for greens, seeds for mush by Iroquois Indians, and in Montana and Southwest US.

ECHINOCEREUS

C. Fowler (1986:72). *Echinocereus engelmanni*, fruits, Panamint, Utah Southern Paiute.

Scott-Cummings et al. (2001). Spines from this plant were recovered from 48FR3245 Late Prehistoric.

EPHEDRA, (MORMON TEA)

Harrington (1967: 356-358). *Ephedra* spp. (Jointfir, Desert Tea, Mexican Tea, Mormon Tea, Brigham Young Tea, Jointpint). Used by Native Americans and pioneers for tea. Taken as a tonic or stimulating beverage. About one cup of greenish twigs are used, fresh or dried, and boiled with eight cups of water for 5-15 minutes, to fit personal taste. The tea will acquire a yellowish or pinkish tone. The Utes roasted the twigs before making the tea for a better flavor. This plant does not contain the drug "ephedrin," as does the Chinese species. "Indians roasted the seeds of Jointfir and ate them whole or ground them into a meal or flour" which makes a bitter tasting bread.

Scott-Cummings et al. (2001). Pollen from this plant was recovered at 48FR3243 Late Prehistoric.

FIREWEED, WILLOW HERB *EPILOBIUM*,

Harrington (1967:74-76). *Epilobium angustifolium* (*Chamaenerion angustifolium, C. spicatum*). Fireweed, Willow Herb. The young shoots are like asparagus, and the young leaves can be used a potherb, and mix well with lettuce for salads. The shoots were cooked for 5-9 minutes. Harrington tried the stems with young flower buds and found them acceptable in salads. The young plant leafs were palatable, but bitter when older. The older leafs were dried and used to make tea. The mature stems can be stripped of their bark for a slightly sweet pith center eaten raw. The pith also has been used as a flavoring and thickener for soups and stews.

Scott-Cummings et al (2001). *Epilobium* Fireweed, Willow Herb, seeds were recovered at 48FR3092, 48FR3243, 48FR3244, 48FR3245 Late Prehistoric.

GOOSEBERRY, *RIBES INERME*

Galvan Food Group II: Late Summer to Early Fall. The group includes ripening fruits and seeds, depending on the specific plant.

Frison (1978:341-342). Paleoindian storage pit deposits were found in the Schiffer Cave, a small dry rock shelter on the eastern slopes of the Bighorn Mountains, with *Helianthus* sp., *Opuntia* sp., *Amaranthus* sp., *Prunus* sp., *Pinus* sp., and *Juniperus* sp. among the charred seeds recovered. Frison (1978:336). The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including gooseberry *Ribes inerme* (Galvan 1976).

Harrington (1967:262). *Ribes* spp., *Grossularia* spp., *Limnobotrya* spp. Gooseberry, Gooseberry Currant, Prickly Current. Edible fresh or cooked. *Ribes inererme* may be slightly more tart, and fresh berries should be used somewhat sparingly.

Moss (1994). Gooseberry, Arapaho word **toxu'uwuno'**.

Oldman (2001). Gooseberry, Arapaho word, **toxu'uuwuno'** translates as "bush with sharp thorns." Uses are same as chokecherry.

Shimkin (1947:274). Shoshone, *ribes cereum*, Shoshone word **ho'a**, Made soup our of berries and limbs for arrows.

U.S. Department of Agriculture, Forest Service (1988:760). Note this is listed as related to the wax current (*Ribes*) "The (wax current) small bright red berries are sometimes used by Indians, but are not well flavored; however, they are extensively consumed by birds and rodents. The Squaw current is listed as *Ribes inebrians* and is also known as the rock current.

INDIAN RICE GRASS, *ORYZOPSIS HYMENOIDES*

Galvan Food Group II: Late Summer to Early Fall. The group includes ripening fruits and seeds, depending on the specific plant.

C. Fowler (1986:69). The seeds of both the cattail (*Typha latifolia*) and Indian rice grass (*Oryzopsis*) had to be flash burned to remove unwanted chaff.

D. Fowler (1965:153-161). *Oryzopsis hymenoides.* One of the most important Shoshoni flora, Indian rice grass, seeds eaten, occurs from the Sage-grass into the Subalpine 7,000 to 10,000 feet elevation zones.

Frison (1978:336). The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including Indian rice grass *Oryzopsis hymenoides* (Galvan 1976).

Guernsey (1989):148). Indian rice grass grows in disturbed ground, and is still part of the flora at 48HO4.

Harrington (1876:320). Indian Rice grass, Indian Millet, Indian Mountain-Rice. *Oryzopsis hymenoides, Eriocoma hymenoides*. Used as an Indian food since prehistoric times. Indians got rid of the seed hairs by holding a bunch by the stems over a fire and singeing them, while at the same time having a rock or catching device below to catch the seeds. Several live coals would be placed in a pan or basket with the seeds and parch off the seed hairs at the same time parching the seeds for eating. The seeds then could be ground to a meal to make a mush, gruel, to thicken soup, or make cakes.

Moss (1994). Indian rice grass, Arapaho word **hi'iisoono'**.

Niethammer (1974:37-38). *Oryzopsis hymenoides* also known as Indian millet. Indians are known to have gathered more than 15 different grass species, and since getting enough seeds of any one grass was difficult, they most often were mixed together and treated the same. If enough seeds were collected then they could be boiled into a mush or made into a flour and bread. Sometimes ground seeds were used to thicken soups or gravy. All grass seeds can be eaten raw, but usually taste better when dried or roasted and ground into meal or flour.

Scott-Cummings et al. (2001). Oryzopsis seeds were recovered at 48FR3243 Middle Archaic; 48FR3243 Late Archaic; 48FR3092, 48FR3243, 48FR3244 Late Prehistoric.

Smith (1989). The rice grass flowers in May to July, and was gathered in large quantities by Native Americans throughout the western United States, where the seeds were parched and ground into flour for mush or bread ((Blankenship 1905; Chamberlain 1911; Palmer 1871). The short growing season in some areas limited its collection (Steward 1938). Other southwest Wyoming sites include: Sudden Shelter (Coulam and Barnett 1980); the Taliaferro Site (Smith 1986); 48UT445 (Schroedl 1985); 48SW2429 (Nelson 1982); 48CR3472 and 48CR3495 (Sender et al. 1982).

Steward (1938:26). *Oryzopsis hymenoides*, Riker, Sand bunch grass, or Indian Mountain Rice grass, An important seed in the southern portion of [Nevada] occurring in considerable quantities which were gathered in late spring or early summer for storage. The harvest period was limited to only a few weeks, which restricted gathering. Called by Shoshone and Northern Paiute, **wai**. Used also by Gosiute (Chamberlain 1911:68).

U.S. Department of Agriculture, Forest Service (1988:148). "The numerous seeds of this species were formerly one of the food staples of many western Indians; hence the common name, Indian ricegrass. Indians ground the seeds into meal or flour which made into bread. This food was held in high esteem by the Zuni Indians of New Mexico who ate the ground seeds alone or mixed them with cornmeal. They gathered large amounts of the seed for winter provisions especially when their farm crops failed."

Walker et al. (1977:26). Indian rice grass, seeds eaten (Yanovsky 1936:8), (Steward 1938:26).

Yanovsky (1936:8).

WESTERN JUNIPER, *JUNIPERUS OCCIDENTALIS*

Frison (1978:341-342). Paleoindian storage pit deposits were found in the Schiffer Cave, a small dry rock shelter on the eastern slopes of the Bighorn Mountains, with *Helianthus* sp., *Opuntia* sp., *Amaranthus* sp., *Prunus* sp., *Pinus sp.,* and *Juniperus* sp.among the charred seeds recovered. Page 336, the Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including Amaranths *Amaranthus* sp. (Galvan 1976).

Oldman (2001). Cedar (juniper) Arapaho word ***be'e3einoono***.

Yanovsky (1936:5). *Juniperus occidentalis*, sweet and nutritious berries eaten fresh or dried, and made into bread. From Washington to Texas. Other Juniper species also listed with berries eaten fresh, stored for winter, cooked.

LEPIDIUM

Batson (1982:80, 82). *Brasica* L. (Sinapis) Cabbage, Mustard, Rape, Turnip, etc. *Lepidium* L. (Pepper-grass); *Lunaria* L. (Honesty).

Hamel and Chiltoskey (1975:42). Virginicum pepper grass, chicken pepper. "Apply bruised root to skin to draw blister quickly; poultice for croup; food; mix with chicken feed to make them lay; tea for sick childres."

Scott-Cummings et al (2001). Seeds from this plant were recovered at 48FR3092, 48FR3244 Late Prehistoric.

Yanovsky (1936:27). *Lepidium fremontii*, Seeds ground and made into bread or mush, or used for flavoring other foods. *Lepidium* sp. Leaves eaten as greens.

LILIACEAE

Scott-Cummings et al. (2001). Pollen from this plant was recovered at 48FR3242 Middle Archaic.

LIMBER PINE, *PINUS FLEXILIS*

Frison (1978:341-342). Paleoindian storage pit deposits were found in the Schiffer Cave, a small dry rock shelter on the eastern slopes of the Bighorn Mountains, with *Helianthus* sp., *Opuntia* sp., *Amaranthus* sp., *Prunus* sp., *Pinus* sp., and *Juniperus* sp. among the charred seeds recovered. Frison (1978:338-339): The Leigh Cave Site is a small rock shelter of the McKean Complex, from the Early and Middle Plains Archaic

periods, with dry deposits, at an elevation of 5,600 feet, in the Bighorn Basin, indicating intensive use of the wild onion and Mormon cricket, with roasting pits. Besides the wild onion, nine other usable plants were present: buffalo berry, prickly pear, chokecherry, thistle, juniper, limber pine, wild rose, wild rye, and yucca. Frison (1978:336): The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including limber pine *Pinus flexilis* (Galvan 1976).

Scott-Cummings (1991). Flora associated with Late Prehistoric Period features dating 1060-1610 BP, including: *Pinus* Pine (buds and charcoal), *Purshia* Antelope Brush (charcoal), *Amaranthus* (seed), *Aronia* Chokeberry (seeds), *Chenopodium* (seeds), Leguminosae (seeds), *Corispermum* (seeds), and unidentified berry and seed fragments, Salicaceace (*Salix* and *Populus*) (buds and charcoal), *Artemisia* Sagebrush (charcoal).

Yanovsky (1936:5). Seeds and cambium used from Northwestern States to Arizona.

LAMBS QUARTERS, *CHENOPODIUM* SPP.

Galvan Food Group I: Spring and Early Summer. Group includes greens, roots, and bulbs depending on the plant.

Batson (1982:62-64). *Chenopodium* (Goosefoot, Lamb's Quarters,).

Frison (1978:336). The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including chenopods *Chenopodium* spp. (Galvan 1976).

C. Fowler (1986:73). Use of seeds: Paiutes, Gosiutes, Utah Southern Paiutes, Northern Shoshones, and Kawaiisu.

D. Fowler (1965:82-88, 153, 159). *Chenopodium* spp. Goosefoot was one of the most important Shoshoni flora food sources. They ate the seeds and young plants.

Guernsey (1989:131-35, 140-41, 143-44, 146, 147-48). In Wyoming, goosefoot (*Chenopodium*) is, thus far, the most common taxon recovered from fire hearths. It can therefore be interpreted as a local prehistoric staple food. There is evidence of Native American domesticated *Chenopodium* with the Mississippi Late Archaic cultures, which emphasizes the importance of the plant to prehistoric peoples (Wilson 1981). It may found in some fire hearths due to having been used as a baking pit liner, it contains suitable moisture for steaming other foods (Nequatewa 1943; Niethammer 1974). Chenopodium is found in Sagebrush steppe, sandy soil, alkaline flats, and disturbed areas, and is a natural species in the vicinity of 48HO4. A single plant can produce as much as 20,00-100,000 seeds, which ripen in the late summer to early fall (Stevens 1932).

Gilmore (1977:26). Wahpe toto (Dakota) "greens" (**wahpe**, leaves; **toto**, green). **Kitsarius** (Pawnee) "green juice" (**kits**, from **kiteu**, water, juice; **kidarius**, green). Among the Tote Dakota and the Omaha the young plant was cooked as pottage. It was also used by the Pawnee as a green paint for bows and arrows. It is worth noting Gilmore accredits Lamb's Quarters as being a naturalized European plant that became used by Indians, whereas Guernsey (1989) places it in a 2,000 B.P. strata at Legend Rock.

Hamel and Chiltoskey (1975:42). *C. album* Lambs quarters: "Cooked salad greens to keep healthy."

Harrington (1967:69-71). Lambs Quarters, Pitseed Goosefoot, Pigweed, *Chenopodium berlandieri.* Very similar to *C. album.* The seeds are used by Indians as source for grinding into meal for breads or making gruel. The seeds are small and smooth and need to be boiled, then mashed, and then dried before grinding. The young tender shoots are popular as a potherb and boiled (about 30-40 minutes) and eaten like cooked spinach. Related Species: *Chenopodium leptophyllum. Chenopodium Album.* Harrington (1967:64) also suggests the mixing of Chenopods with *Amaranthus reflexus* and Mustard *Brassica nigra* leaves in salads or when cooked like spinach.

Niethammer (1974:112-114). A mild tasting green., and was used with stews, soups, and as young leaves eaten raw. The numerous black seeds were ground for breads and mush. Choose a plant less than one foot tall or the new shoot of a older plant. Put leaves and stems in water and boil for 5-10 minutes with a little salt. Was used boiled as a poultice for swelling and toothache. Tea was used to ease rheumatism.

Scott-Cummings (1991). Flora associated with Late Prehistoric Period features dating 1060-1610 BP, included: *Aramanthus* (seed), *Aronia* Chokeberry (seeds), *Chenopodium* (seeds), Leguminosae (seeds), *Corispermum* (seeds), and unidentified berry and seed fragments, Salicaceace (*Salix* and *Populus*) (buds and charcoal), *Pinus* Pine (buds and charcoal), *Artemisia* Sagebrush (charcoal), *Purshia* Antelope Brush (charcoal),

Scott-Cummings et al. (2001). *Chenopodium* seeds/ embryos of this plant were recovered at 48FR3091, 48FR3243 Middle Archaic; 48FR3092, 48FR3243 Late Archaic; 48FR3092, 48FR3243, 48FR3245 Late Prehistoric.

Smith (1989:D8). Charred goosefoot *(Chenopodium sp.)* dominated the Buffalo Hump Site plant macrofossil assemblage, which is representative of how important it was to prehistoric Native Americans. Evidence of prehistoric use of Chenopodium has also been found at Sudden Shelter, Colorado Plateau (Coulam and Barrett

1980); Hogup Cave and Danger Cave, Eastern Great (Fry 1976); Ross Site, Alberta (Johnson 1962); and, in southwest Wyoming is the most common taxon (Smith 1986b). *Chenopodium* seeds were collected in large numbers to be ground into flour and mush (Palmer 1871). Chenopodium, particularly goosefoot, was the chief plant food source for the Gosiute of Utah (Chamberlain 1911). In addition to seeds, the young plants and leaves were boiled as greens (Gilmore 1977; Palmer 1871; Rogers 1980; Steward 1938).

Yanovsky (1936:22). *Chenopodium album* L. Lambsquarters. Young leaves used for greens or boiled with fat; seeds ground into flour and made into bread or mush, from Montana to Arizona.

LEGUMINOSAE

Scott-Cummings (1991). Flora associated with Late Prehistoric Period features dating 1060-1610 BP, included: Leguminosae (seeds), *Aronia* sp. Chokeberry (seeds), *Amaranthus* sp. (seed), *Chenopodium* sp. (seeds), *Corispermum* sp. (seeds), and unidentified berry and seed fragments, Salicaceace (*Salix* sp. and *Populus* sp.) (buds and charcoal), *Pinus* sp. Pine (buds and charcoal), *Artemisia* spp. Sagebrush (charcoal), *Purshia* sp. Antelope Brush (charcoal).

Steward (1938:23). *Chenopodium*, "Seeds of different species were important to Nevada Shoshone. *C. album* L., goosefoot or lambs quarters. Chenopodium called **uap**, **uap**i, and **uyup** depending on group of Nevada Shoshone. Seeds eaten and young plants eaten as greens.

MALLOW, CHEESE WEED (*MALVA NEGLECTA, MALVA ROTUNDIFOLIA) MALVACEAE* L.

Batson (1982:112-113). *Malva* L. (Mallow); *Sida* L *(Malva).*

Hamel and Chiltoskey (1975:44). *M. neglecta*; "Put flowers in oil, mix with tallow to use in sores."

Harrington (1967:315-317). Mallow, Cheese Weed *Malva neglecta.* Naturalized from Europe, and considered a weed with a lot of (seeds) fruits, but quickly adapted by Native Americans. . Eaten raw or cooked and as a potherb. Use the young shoots and leaves for a mild taste, with a mucilaginous juice. Makes good soup. The immature fruits are eaten raw, are crisp, have a slight sweet taste, and called "cheeses." They can be used as a relish or in salads. They can be pickled in brine or vinegar. When cooked about 15 minutes work well in soups. Dried leaves are used as a tea, and have been commercially marketed. Chewing the fruits when lacking water help keep the mouth moist.

Scott-Cummings et al. (2001). Malvaceae (fruit) was found at 48FR3243 in Late Archaic and Late Prehistoric features.

MENTZELIA

Batson (1982:115). *Mentzelia* L (Blazing Star, Evening Star, Stick-leaf).

Scott-Cummings et al. (2001). Seeds from this plant were recovered at 48FR3244 Late Prehistoric.

MILK VETCH, LOCO-WEED, *ASTRAGALUS*

Batson (1982:99, 102). *Astragalus* L (*Oxytropis* L))(Milk Vetch, Loco-weed).

Harrington (1967:20-22). *Astragalus bisculcatus* (*Diholcos bisculcatus, D. decalvans, Phaca bisculcata*) (Two-Grooved Milkvetch, Two-Grooved Loco) Many species of *Astragalus* and *Oxytropis* are poisonous to live stock due to being selenium collectors. "It is better to avoid all locos and milkvetches, except perhaps the ones with fleshy plum shaped fruits (*Astragalus succulentus*). Harrington (1967:301): *Astragalus succulentus (A. Mexicnaus, Geoprumnon succulentum*) (Milkvetch, Ground Plum, Buffalo Pea). "The fleshy, immature pods are highly esteemed by those of us who have tried them, and were often used by the Indians." Eaten raw, boiled, and pickled. Pick fruits when young. The seeds are hulled like peas. Is a good emergency food, but care needs to be taken to not confuse with poisonous varieties. Other species with the fleshy edible pods are *A. crassicarpus* and *A. plattensis*. Indians used some of the other related species without the fleshy pod, but identification of those plants are considered very difficult, and dangerous.

Scott-Cummings et al. (2001). Seeds from this plant were recovered at 48FR3245 Late Prehistoric.

MUSTARD *BRASSICA NIGRA*

Batson (1982:80, 82). *Brasica* L. (Sinapis) Cabbage, Mustard, Rape, Turnip, etc. *Lepidium* L. (Pepper-grass); *Lunaria* L. (Honesty).

Catherine S. Fowler (1986:72). Brassicaceae (*Lepidium* sp. Pepper Weed) (Mustard Family) seeds, Owens Valley Paiute, Oregon Northern Paiute.

Hamel and Chiltoskey (1975:42). *B. nigra* "Increases appetite; stimulant; tonic; for fever and ague; nervouse fever; dropsy; palsy; phthisic; or asthma; poultice for croup."

Harrington (1967:62-65). Mustard *Brassica nigra.* Important economic plant of Southwest Indians. There are two pod groups. Ripening pods are collected and sun dried. The seeds are beat out of the pods, and can be used directly in soups, stews, and as meat flavoring, or ground into meal as used as a mustard powder. "This powder can be mixed with flour, vinegar, and water to make a mustard paste . . ." even though somewhat different in taste, has somewhat similar effects as mustard sold in the stores. Mustard greens are prepared in same fashion as spinach, but may take as long as 30 minutes boiling,

depending on the tenderness or toughness of the leaves. Raw young leaves can be used in salads. "The greens (both raw and cooked) are slightly biting and pungent and often mixed with *Amaranthus retroflexus* or *Chenopodium* spp."

Scott-Cummings et al. (2001). Brassicaceae, Mustard) (pollen, seeds) was found at sites 48FR3092 Late Archaic; 48FR3092, and 48FR3243 Late Prehistoric.

Yanovsky (1936:26). Black Mustard *Brassica nigra*, Used for greens by the Luisenos of California.

NEDDLE AND THREAD, *STIPA COMATA*

This species is currently found at Miller Spring 48FR3309 and Onion Flats 48FR760.

Guernsey (1989:148). *Stipa comata* is found in Sagebrush steppe and sandy soil and grows naturally in the vicinity of 48HO4.

Scott-Cummings et al (2001). Areoles and awns referable to *cf. Stipa* were recovered at 48FR3092 Early Archaic; 48FR3091 Middle Archaic; 48FR3092 Late Archaic; 48FR3244, 48FR3245 Late Prehistoric.

U.S. Department of Agriculture, Forest Service (1988:194). "This grass is valuable because it begins growth early in the spring when other grasses area dry. Furthermore, it greens up and produces new growth in summer and fall with the advent of sufficient precipitation . . . Seed matures in midsummer and drops off in late summer or early fall."

NUTGRASS, CHUFA, FLATSEDGE, *CYPERACEAE*

Batson (1982:32). Cyperaceae (Sedge Family) *Scirpus* L. (Bulrush); *Schoenus* L. (Black Sedge); *Carex* L (Sedge); *Carex Kobresia* Willd; *Cyperus* L. (Nut-grass); *Dulichium* Rich; *Eleocharis* R. Br. (Spike Rush); *Rhynochospora* Vahl. (Beak Rush) *Bulbostylis* Kunth; Schoenus; *Cladium* R. Rr Sawgrass); *Hemicarpha* Nees. & Arn (Scirpus); *Eriophorum* (Cotton-Grass); *Fimbristylis* Vahl.

Harrington (1967:174-175). Nutgrass, Chufa, Flatsedge, *Cyperus esculentus*, The tubers can be eaten raw, baked, or boiled. The tough rind needs to be peeled away leaving a sweetish nutty flavored core. The cooked tubers can be ground into a flour. Tubers mashed and strained, with water and sugar make a beverage. The inner base of the stems can be eaten raw as can the tubers themselves. *C. sativus*, a variation of *C. esculentus* is cultivated for the tubers in the Southern U.S. and marketed under the name "chufa." A variant was used in ancient Egypt, and the tubers are still commercially sold in part of Europe.

Scott-Cummings et al. (2001). Cyperaceae (pollen, seeds) were recovered in features at 48FR3092, 48FR3244 Late Prehistoric.

WILD ONION, *ALLIUM* SP.

Galvan Food Group I: Spring and Early Summer. Group includes greens, roots, and bulbs depending on the plant. This species is currently found at Miller Spring 48FR3309.

Densmore (1974:286). Chippewa **muckode'cigaga'wunj**; used for colds.

C. Fowler (1986:69). Some plants could be eaten raw, but native peoples often preferred roasting them in an elaborate sand roasting pit, such as, the camas (*Camassis quamash*), edible valerian (*Valeriana edulis*), and swamp onion (*Allium validum*).

D. Fowler (1965:82-88, 153-161). *Allium acuminatum,* Wild Onion, bulb eaten, found in the Montane 5,000-7,000 feet elevation, and Subalpine 7,000 to 10,000 feet elevation zones.

Frison (1978:338-339). The Leigh Cave Site is a small rock shelter of the McKean Complex, from the Early and Middle Plains Archaic periods, with dry deposits, at an elevation of 5,600 feet, in the Bighorn Basin, indicating intensive use of the wild onion and Mormon Cricket, with roasting pits. The floor of the shelter was covered with a hard packed layer of wild onion bulbs up to 2 cm thick at places. Besides the wild onion, nine other usable plants were present: buffaloberry, prickly pear, chokecherry, thistle, juniper, limber pine, wild rose, wild rye, and yucca. Page 336, the Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including Wild Onion *Allium* sp. (Galvan 1976).

Gilmore (1977:19). Allium Mutabile. Wild Onion. **Pshi'** (Dakota). **Ma'zho'ka-mantanaha** (Omaha-Ponca). **Shi'hop** (Winnebago). **Osidiwa** (Pawnee). "All species of wild onion found within their habitat were used for food by the Nebraska tribes, commonly raw and fresh as a relish, sometimes cooked as a flavor for meat and soup, also fried.

Hamel and Chiltoskey (1975:35). *Allium sativum, A. canadense* Wild Garlic. "Stimulant'; carminative; diuretic; expectorant; a mild cathartic; useful for scurvy; dropsy; asthma; removes deafness; tincture prevents worms and colic in children; fry and put on chest for croup."

Harrington (1967:345). Onion, Geyer Onion, *Allium geyeri, A. funiculosum, A. dictyotm, A. pikeanum.* The raw or boiled bulbs and leaves of wild onions can be eaten and used as flavoring. The juice of wild onions can be boiled down to a syrup and used as a cold remedy. The bulbs can be dried and stored for future use. The "Death Camas" is a very similar looking plant and caution should be taken not to confuse the two.

Harris (1994). Onion, Shoshone word **Kenka**.

Moss (1994). Wild onion, Arapaho word **xoucen**.

Niethammer (1974:98-99). Wild onions rubbed on the skin act as an insect repellent. When parboiling wild onions throw away the first water. To roast onions do not peel. Roast on a medium bed of coals, turning at times. When tender, scoop out the centers to eat.

Shimkin (1947:274). Shoshone word **kun'** eaten. Basin Shoshone word **kunk**

Steward (1938:21). *Allium acuminatum*, Wild Onion. Called **gunk**, **kunk**, **gunga**, and possibly **koxi** by differing Nevada Shoshone. Eaten as greens, with bulb sometimes roasted in hot ashes. Never preserved. Several other unidentified *Allium* species were eaten, and called **amu**, or **muh**.

U.S. Department of Agriculture, Forest Service (1988:252). "For centuries a medicinal oil has been commercially extracted from the cultivated garlic *(A. sativum)* being used medically in several forms of bronchitis and for nervous diseases of young children, and acts as a general mild stimulant. The bruised bulbs are also used as a poultice in the treatment of catarrhal pneumonia. Canada garlic *(A. candense)*,which occurs from Maine to Colorado, is of equal value for medical purposes."

Walker et al. (1977:25). Bulbs eaten raw or cooked (Yanovsky 1936:11, Steward 1938:21).

Yanovsky (1936:11). *Allium cepa* L. Onion, *Allium geyeri* S., Geyer Onion. Bulbs eaten raw, used as flavoring by Blackfoot Indians, and other tribes. Onions steamed in pits by Apache and Nez Perce Indians. *Allium sibiricum* L., Siberian Onion, bulbs used by Cheyenne Indians.

PENNYCRESS, *THLASPI ARVENSE*

Guernsey (1989:133-134). uncharred seeds found in features.

Harrington (1967:103-105). Pennycress, *Thlaspi arvense*. Eaten raw in salads or cooked as a potherb like spinach. Belongs to the mustard family and has some of that taste. Boil the shoots 15-25 minutes, changing the water once or twice. Harrington said it tastes somewhat like Pigweed (*Amaranthus*).

U.S. Department of Agriculture, Forest Service (1988:540). "Field pennycress formerly was a popular substitute for mustard." These plants make their growth in the spring and early summer, while the soil is still moist, and as a result are dormant during the dry period."

PHACELIA

Batson (1982:140). *Phacelia* Juss. (*Emmenabtgem eutocam hydrophyllum*).

Scott-Cummings et al. (2001). Seeds from this plant were recovered at 48FR3244 Late Prehistoric.

PLANTAIN, *PLANTAGO*

Hamel and Chiltoskey (1975:42). (*P.aristata, P.major, P. lancelata*) "Wilt or scald leaf for burns, bruises, or beat for poultice; dressing for blisters, ulcers, or sores; leaf infusion with rush will strengthen a child learning to crawl or walk; root tea for dysentery; leaf poultice for headache; apply wilted leaves to yellowjacket sting; tea to bathe swelling; tea to check discharge; tea to check babies' bowels; use tea as douche; tea for poisonous bites, stings, and snakebites; for bowel complaints; bloody urine; juice for sore eyes; green plantain (*P. major*) as cooked greens." (wild plantain) page 63 "Used for snake bite; chew root, swallow most and apply rest to the wound, repeat as necessary. (Adair 1775).

Scott-Cummings et al. (2001). Plantago seeds were recovered at 48FR3243 and 48FR3245 Late Prehistoric.

POACEAE

Batson (1982:20). *Poa* L. mostly rather low tuffed, anns, and pers of various habitats from the arctic tundras; many confusing similar species, 50 or more.

Scott-Cummings et al. (2001). Pollen and seeds from this plant were recovered at 48FR3091, 48FR3242 Middle Archaic; 48FR3243 Late Archaic; 48FR3092, 48FR3243, 48FR3244, 48FR3245 Late Prehistoric.

POLYGONUM

Scott-Cummings et al. (2001). Seeds from his plant were recovered at 48FR3243 and 48FR3244 Late Prehistoric.

PORTULACA

Batson (1982:67). *Portulaca (Lewisia pursch* (Bitterroot); *Portulaca* L.

Scott-Cummings et al. (2001). Pollen from this plant was recovered at 48FR3091 Middle Archaic.

PRICKLY PEAR, *OPUNTIA POLYACANTHA*

This species is very common at most petroglyph and lithic scatter sites in the Wind River Basin, including Miller Spring 48FR3309; Twin Creek No. 1 48FR93; Little Popo Agie Nos. 1-9, 48FR2506 to 48FR2510; Cedar Ridge No. 1 48FR104; Castle Gardens 48FR108; and Onion Flats 48FR760.

D. Fowler (1986: 82-88, 160). *Opuntia* spp, Cacti, fruit and roots eaten.

Frison (1978:338-39). The Leigh Cave Site is a small rock shelter of the McKean Complex, from the Early and Middle Plains Archaic periods, with dry deposits, at an elevation of 5,600 feet, in the Bighorn Basin, indicating intensive use of the wild onion and Mormon cricket, with roasting pits. Besides the wild onion, nine other usable plants were present: buffaloberry, prickly pear, chokecherry, thistle, juniper, limber pine, wild rose, wild rye, and yucca.

Guernsey (1989:148). *Opuntia polyacantha* is found in sagebrush steppe and sandy soil and grows naturally in the vicinity of 48HO4.

Harrington (1967:246-249). Pricklypear, Tuna, Indian Fig, *Opuntia*. The edible parts are the pulp between the rind, and the seeds, even though the seeds are considered inpalatable. All cactus are edible in the young vegetative stages, and no cactus is known to be poisonous. Indians are said to have burned off or rubbed off the bristles, however, an archaeologist found bristles in all Navaho feces researched. The fruit can be split down one side, opened up, and the central seeds removed. The pulp layer then can be scraped away and eaten raw. Indians often sun dried the pulp for storage. The seeds also were sun dried and stored. They could be parched, or ground into a meal for gruel and cakes. The young stem segments can be peeled and the contents eaten raw, or boiled, or roasted.

Moss (1994). Prickly pear, Arapaho word **ho'ho'yoox**.

Niethammer (1974:15-21). *Opuntia phaeacantha*, The Pimas, Yumans, and Apaches warn eating too many prickly pears would cause the chills or shivers. The Pimas also believe the purplish fruits are poison when eaten too much (Niethammer found no proof of this). Preparation: using tongs collect the pears, usually the dark red ones or ones with red pulp when pulled from the plant are the juicer and more ripe. Brush under running water, and blanch for a bout 10 seconds in boiling water. Still using tongs, blanch and peel about six pears at a time, because the thorns become hard again when cooled. Discard the peels, slice the pear in half and remove the seeds with your thumb. Put the seeds and fruits in separate bowls. Mash the pulp with a potato masher and strain through a mesh or colander lined with cheese cloth. When you have 3/4 cup of seeds put in water and break up the seed clusters and let soak several hours, then strain off the liquid and add to the liquid drained from the pulp. Combine in a saucepan and simmer for 5 minutes. About 24 fruit make one quart of juice. The juice can be mixed with other juices, including to jelly.

Shimkin (1947:273). Shoshone word **wo'gwe'ip**, inside burned for glue and paint. Gosiute, Basin Shoshone, Kiowa, Hopi formerly ate.

Scott-Cummings et al. (2001). *Opuntia* seeds/embryos, pollen, and fruit were recovered at 48FR3091, 48FR3092, 48FR3242, 48FR3243, Middle Archaic; 48FR3092, 48FR3243 Late Archaic; 48FR3092, 48FR3243, 48FR3244, 48FR3245 Late Prehistoric.

Smith (1989:D13). One charred pricklypear seed fragment was found at the Buffalo Hump Site. The plant flowers from April to July, and is common to sandy areas throughout southwest Wyoming. Plains Indians ate the young plant joints and red fruit (Blankenship 1905). The joints were also boiled which allowed the removal of the spines and thorns, however, some Indians roasted the stems to remove the thorns (Chamberlain 1911; Palmer 1871). The dried fruits were cooked with meat. The dried seeds were parched and pulverized and made into a gruel (Harvard 1895). Charred pricklypear seeds have been found at 48CR3495 in the Red Desert of southwest Wyoming (Sender et al. 1982).

Steward (1938:26). *Opuntia basilaris*, prickly pear, the Death Valley Shoshone called **nava**. *Opuntia*, various species used in different places with stems and fruit sometimes eaten. Other Nevada Shoshone names for prickly pear were: **govi, agovi, wogavi**. Also used by the Gosiute. (Chamberlain 1911:67). The Lemhi Shoshone burned off needles and baked them in hot ashes in a hole covered with earth and ashes; handled with sticks, but not stored.

U.S. Department of Agriculture, Forest Service (1988:706). ". . . has been used extensively as food by the Indians, being eaten fresh or dried for winter use. The fruit and young growth of certain varieties are still used locally as food, especially in Mexico where some forms are cultivated for this use.

Walker et al. (1977:26). Prickly Pear, fruit eaten raw or cooked (Yanovsky 1936:8; Steward 1938:26).

RUBBER RABBITBRUSH, *CHRYSOTHANMNUS NAUSEOSUS*; LOW RABBITBRUSH, *CHRYOSOTHAMNUS VISCIDIFLORUS*.

This species is currently found at Sinks Canyon 48FR2498, Sinks Canyon 48FR2724, and Onion Flats 48FR760.

D. Fowler (1965:82-88, 161). *Tetradmia sainoas*, Rabbit Brush, for making arrow points.

Mionynski (1987; 1998). Rabbit Brush. Creates nose allergies during spring and fall. Bright yellow flower with purple. It looks a lot like sagebrush, but doe not smell like sagebrush. Antelope eat it.

U.S. Department of Agriculture, Forest Service (1988: 648). "According to Professors Hall and Goodspeed, Indians located near St. George, Utah, as early as 1878, showed some Mormon boys how to make the (chewing) gum. The first samples of rabbitbrush rubber (called chrysil) for scientific work were prepared by Paiute Indians at Benton, California.

ROSACEAE

Scott-Cummings et al. (2001). Pollen from this plant was recovered at 48FR3091, 48FR3092, 48FR3242 Middle Archaic; 48FR3243, 48FR3245 Late Prehistoric.

WILD ROSE, *ROSA* SPP.

Galvan Food Group III: Winter. Fruits and seeds remaining on the plants for at least part of the winter. This species is currently found at Sinks Canyon

48FR2498, Twin Creek No. 1 48FR93; and Onion Flats 48FR760.

Densmore (1974:292). Chippewa **bi'jikiwi'ginig**. Medicine (tonic).

C. Fowler (1986:78). Use of fruits: Eastern Shoshone, Northern Paiutes, Gosiutes, Western Shoshone, Northern Shoshones, Northern Utes, and Utah Southern Paiutes.

D. Fowler (1965:82-88. 159-160). *Rosa ultramontana,* wild rose, seeds eaten.

Frison (1978:338-339). The Leigh Cave Site is a small rock shelter of the McKean Complex, from the Early and Middle Plains Archaic periods, with dry deposits, at an elevation of 5,600 feet, in the Bighorn Basin, indicating intensive use of the wild onion and Mormon cricket, with roasting pits. Besides the wild onion, nine other usable plants were present: buffaloberry, prickly pear, chokecherry, thistle, juniper, limber pine, wild rose, wild rye, and yucca. Frison (1978:336) The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including Wild Rose ***Rosa* spp.** (Galvan 1976).

Hamel and Chiltoskey (1975:53). *Rosa palustris* wild rose. "Boil roots, drink for dysentery; bark and root tea for worms."

Harrington (1967:269). Rose, *Rosa spp*. Rose hips can be collected and stored. They are high in vitamins A and C, and have an antiscorbutic effect, and can be used like a vitamin pill. The fruit should be taken when ripe, even after a frost. The fruit is split longitudinally, and the inner seed-like structures removed, getting rid of the hairs. The blossom end is usually removed and the pulp can be eaten raw, or cooked or make in jams or wine. For long term storage, the rose hips are dried and then ground into a powder, which can be used as a flavoring or as a tea. The rose petals can be eaten raw or dried for a tea. The rose roots are also used for making an Indian tea, and the inner root bark smoked as a tobacco. The rose hips often remain above the snow and can be found in the Winter.

Moore (1979:141). A good treatment for diarrhea, 5-10 buds steeped as a tea, and drunk every several hours. A safe eye wash, a mild astringent giving tone to tissue and shrinking capillary inflammation and redness.

Moss (1994). Wild rose, Arapaho word **yeinouu**.

Niethammer (1874:77-78). Contain vitamins A, C, and K. One rose hip contains 10 mg. of vitamin C. The seeds are rich in vitamin E. Rose hips can be eaten raw as a snack, and rose petals can be eaten raw in a salad. Dried rose hips ground into a powder makes a tea, by using one teaspoon to 1 cup of boiling water. Let steep for 1 to 2 minutes. The Santa Clara Pueblo dried the rose petals, ground them fine, and mixed them with grease for a salve for sour mouths. The cooked seeds can relieve muscular pains. Fine ground petals were also used for sore throats.

Scott-Cummings et al. (2001). *Rosa* seeds were recovered from 48FR3244 Late Prehistoric.

Shimkin (1974:275). Shoshone word **3o'nip**, Rose berries eaten with grease.

Steward (1938:29). *Rosa ultramontane*, wild rose. Called **tsiavi, tsiabi**, and **tsiab** by various Nevada Shoshone. Seed sometimes eaten. Also eaten by Gosiute. (Chamberlain 1911:72).

U.S. Department of Agriculture, Forest Service (1988:769-70). "The ripened fruit, however, is edible by man and beast."

Walker et al. (1977:27). Rose, seeds eaten (Steward 1933:29), fruit eaten (Yanovsky 1936:29).

BALTIC RUSH, (WIRE RUSH) *JUNCUS BALTICUS*

Found currently at Miller Spring, 48FR3309.

U.S. Department of Agriculture, Forest Service (1988:223-225). "Many of the American Indian tribes used the wiry stems of the wire rush in manufacturing various articles. The Klamath Indians of Oregon, and the White Mountain Apaches of the Arizona Plateau, for example, made baskets and mats from the stems of this plant. Because of its abundance, it was often used by the Indian children, when learning to weave."

WILD RYE, *ELYMUS CANADENSIS*

Galvan Food Group II: Late Summer to Early Fall. The group includes ripening fruits and seeds, depending on the specific plant. This species is currently found at Miller Spring 48FR3309.

D. Fowler (1965:82-88, 159-161). *Elymus condensatus*, Wild Rye, seeds eaten.

Frison (1978:3383-39). The Leigh Cave Site is a small rock shelter of the McKean Complex, from the Early and Middle Plains Archaic periods, with dry deposits, at an elevation of 5,600 feet, in the Bighorn Basin, indicating intensive use of the wild onion and Mormon cricket, with roasting pits. Besides the wild onion, nine other usable plants were present: buffaloberry, prickly pear, chokecherry, thistle, juniper, limber pine, wild rose, wild rye, and yucca. Frison (1978:336). The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including Wild Rye *Elymus canadensis*. (Galvan 1976).

Shimkin (1947:272). Shoshone word **pi'a s_nip**, for sore eyes; scraping. Basin Shoshone and Gosiute ate seeds.

Steward (1938:24). *Elymus condensatus*, wild-rye. Called **waiya** and **waya** by the Northern Piautes. Called **pa** [water] **sonip** [grass], **sonip**, and **wadunzip** by various Nevada Shoshone. With the seeds called **wa, wahavi, waavi, wayabim, wayiabi, wada, waduzip**, and **wavi**

by various Nevada Shoshone. The Ruby Valley Shoshone were sometimes called the Wada Duka [seed eaters].

U.S. Department of Agriculture, Forest Service (1988:89-90). "This species produces an abundance of seed and was used as meal, or pinole, by the Indians. Such utilization was so common the whites often referred to *E. triticoides* as Squawgrass.

Yanovsky (1936:8). Canadian Wild Rye, *Elymus canadenis* L., Seeds eaten in Utah and Nevada. Beardless Wild Rye *Elymus triticoides*, Seeds used for pinole in California.

Walker et al. (1977:26). Wildrye, seeds eaten (Yanovsky 1936:8), (Steward 1938:24).

BIG SAGEBRUSH, *ARTEMISIA TRIDENTATA*

This species is commonly found at most petroglyph and lithic scatter sites in the Wind River Basin, including Sinks Canyon 48FR2498; Little Popo Agie Nos. 1-9, 48FR2506 to 48FR2509; Castle Gardens 48FR108; Whiskey Basin 48FR311; Miller Spring 48FR3309; and Onion Flats 48FR760.

Batson (1982:172).

D. Fowler (1965:82-88, 159-161). *Artemisia tridentata,* Sagebrush, fire drill, and hearth, bark for twined bags and garments.

Scott-Cummings et al. (2001). *Artemisia,* leaves, pollen, and seeds were recovered at 48FR3091, 48FR3243 Middle Archaic; 48FR3092, 48FR3243 Late Archaic; 48FR3092, 48FR3243, 48FR3244, 48FR3245 Late Prehistoric.

Guernsey (1989:133-135, 138, 144). *A. tridentata* wood charcoal in hearth and seeds from stratum nos. 1 and 2. Seeds used to make pinole (Yanovsky 1936); It is possible the sagebrush seeds were used as a fuel. Sagebrush grows in Sagebrush steep and sandy soil, and the seeds mature in early to mid fall.

Hamel and Chiltoskey (1975:62). Artemisia wormwood (akin to sagebrush) *Artemisia biennis* "Poultice stomach for worms; cramps; colic; painful menstruation; sores; wounds; put seed in molasses for worms."

Mionynski (1987; 1998). Sagebrush. Sagebrushes is not a real sage, such as the sage found in the cooking herbs, but smells like sage. It medicinally used for its aromatic oils. Female elk have to eat sagebrush in the spring for calving. Males don't. It is a de-wormer, and in Europe is called wormwood. Is used to treat tapeworm, intestinal parasites, and round worms

Scott-Cummings (1991). Flora associated with Late Prehistoric Period features dating 1060-1610 BP, included: *Amaraanthus* sp. (seed), *Aronia* sp. Chokeberry (seeds), *Chenopodium* sp. (seeds), Leguminosae (seeds), *Corispermum* sp. (seeds), and unidentified berry and seed fragments, Salicaceace (*Salix* sp. and *Populus* sp.) (buds and charcoal), *Pinus* Pine (buds and charcoal), *Artemisia* spp., sagebrush (charcoal), *Purshia* sp., Antelope Brush (charcoal).

Smith (1989:D10). A few charred Artemisia sp. seeds were recovered from two components at the Buffalo Hump Site. A. tridentata is the dominant shrub growing today at the site. The seeds of some sagebrush species were gathered and ground into mush by Native Americans of the Intermountain West (Chamberlain 1911; Palmer 1878). The Zuni placed the Chenopodium and A. wrightii as among the most important foods (Castetter 1935). The leaves were made into a strong tea and used for headaches, colds, and worms (Palmer 1878).

Shimkin (1947:271). *Artemisia frigida,* Sagebrush. Shoshone word **p_'h_,** for infusions in fever; for adornment. Basin Shoshone, seeds eaten.

Steward (1938:22). *Artemisia tridentata,* common sage. Called **sawava** and **sawavu'hya** by the Piaute. Called **bohovi, bombi, poo'vi, pagwin, pohovi,** and **pagwinump** by various Nevada Shoshone. The seeds were eaten in most places when other foods were scarce, however, it is bitter. Parched in winnowing basket, but not leached.

U.S. Department of Agriculture, Forest Service (1988:606) ". . . provided an invaluable fuel for the Indians and early explorers."

Walker et al. (1977:25). Sagebrush, seeds eaten (Steward 1938:21), wood used for fire apparatus, bark for bags, clothing, (Steward 1938:22).

FRINGED SAGEBRUSH, *ARTEMISIA FRIGIDA*

Found currently at Miller Spring 48FR3309 and Onion Flats 48FR760.

Mionynski (1987; 1998). Fringed sagebrush. Was used by the Shoshones for worming horses. For worming the leaves can be eaten three times a day for six weeks. Eat the leaves as a decongestant to clean out the sinuses, unless you are allergic to sagebrush. It can also be used for malaria, quit use if too bitter to taste. The leaves cannot be used dried or boiled. The Navaho used sagebrush as a decongestant. They used two full plants in hot springs (like a hot tub) for 20 minutes. The active decongestant oils will be absorbed through the skin. Can also be used for asthma. Native Americans in sweat lodges use the sagebrush with juniper berries.

Scott-Cummings et al. (2001). *Artemisia,* leaves, pollen, seeds were recovered at 48FR3091, 48FR3092, 48FR3243, 48FR3244, 48FR3245.

U.S. Department of Agriculture, Forest Service (1988:602). "Various decoctions of fringed sagebrush were used by the Indians and early western explorers in the treatment of colds, and as a diuretic, mild cathartic, or for bathing."

SALTBRUSH, *ATRIPLEX CANESCENS*

This species is currently found at Onion Flats 48FR760.

Galvan Food Group III: Winter. Fruits and seeds remaining on the plants for at least part of the winter. Orache, *Atriplex patula*

Galvan Food Group II: Late Summer to Early Fall. The group includes ripening fruits and seeds, depending on the specific plant).

Batson (1982:62-64). Chenopodiaceae *Atriplex* L. (Salt Bush, Shadscale, Orach); *Chenopodium* (Goosefoot, Wormseed, Jerusalem Oak, Lamb's Quarter); *Roubieva* Maq. (Chenopodium); *Salsola* L. Russian Thistle); *Sarcobatus* Nees. (Greasewood).

Frison (1978:336). Paleoindian storage pit deposits were found in the Schiffer Cave, a small dry rock shelter on the eastern slopes of the Bighorn Mountains, with Helianthus, Opuntia, Amaranthus, Prunus, Pinus, and Juniperus among the charred seeds recovered. The immediate area is still dominated with saltbrush. Frison (1978:336): the Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including saltbrush *Atriplex canescens*. (Galvan 1976).

Guernsey (1989:131-33, 135, 138-39, 147). The young shoots and seeds are edible (Harrington 1967). The seeds mature mid to late summer and are considered a good food source, with one plant producing up to 16,000 seeds (Stevens 1932). Page 145, *Atriplex* sp., can be a perennial or annual. If the seeds were from an annual, then the site feature was used from mid-late summer. However, if the seeds came from an perennial, then they would have ripened from October-November, and may have been an available food source all winter, and possibly into the next spring (Schopmeyer 1974). Page 148, Atriplex sp. is an alkaline flats habitat plant growing today in the 48HO4 area.

Harrington (1967:60). Orache, Spearscale, Saltbrush, *Atriplex patula, A. carnosa, A. hastata, A. lepathifolia.* There are two types of *Atriplex*, one group a woody shrub (Saltbrush), and the other an annual non-woody plant (Orache), but both types have been used as a food. *Atriplex patula* is an annual non-woody plant (Orache), whose seeds can be collected and used much like other seeds. The young greens can be boiled and eaten like spinach. *A. hortensis* is called Mountain Spinach or Arrach. Often the young shoots are available during the fall due to a good rain germinating the seeds making greens as late as mid-late November. The seeds of the shrubbery species (Saltbrush) can also be ground into meal, and ashes of the burned plant have been mixed with cornmeal by Indians to add color to the cornmeal.

Scott-Cummings et al. (2001). *Atriplex* seeds and fruit were recovered at 48FR3091, 48FR3092, 48FR3243, 48FR3244).

Smith (1989:D7). The charred seeds from the Buffalo Hump site may be spiny hopsage, a species from which the fruits are easily removed. Seeds historically ground into flour for bread or mush (Palmer 1878). Saltbrush seeds have been identified at a number of prehistoric Wyoming sites, including: 48CR3495 in the Red Desert (Sender et al. 1982); 48SW1242 Smith 1986a; and the Taliaferro Site in the Green River Basin (Smith 1986b).

Steward (1938:22). *Atriplex argentea*, salt brush, seeds eaten. Root was called **sunu** by Elko Shoshone with other Nevada Shoshone having similar names for it.

U.S. Department of Agriculture, Forest Service (1988:608). "The flowers appear in abundance from June to August." The nutritious seeds are at times currently used as an animal feed crop.

Walker et al. (1977:25). Saltbrush, seeds eaten (Yanovsky 1936:21; Steward 1938:22).

Yanovsky (1936:21). *Atriplex canescens* Fourwing Saltbrush, Seeds eaten in Utah and Southwest US. *Atriplex sp.*, Saltbush, Seeds dried, parched, and ground; used for pinole or eaten dry, in Arizona.

SARCOBATUS

Batson (1982:62-64). Chenopodiaceae; *Atriplex* L. (Salt Bush, Shadscale, Orach); *Chenopodium* (Goosefoot, Wormseed, Jerusalem Oak, Lamb's Quarter); *Roubieva* Maq. (Chenopodium); ***Sarcobatus*** Nees. (Grease-wood).

Scott-Cummings et al. (2001). Embryos from this plant were recovered at 48FR3091 Middle Archaic; 48FR3092 Late Archaic; 48FR3092, 48FR3244 Late Prehistoric.

SEGO LILY, *CALOCHORTUS NUTTALLII*

Galvan Food Group I: Spring and Early Summer. Group includes greens, roots, and bulbs depending on the plant.

D. Fowler (1965:82-88, 159-161). *Calochortus gunnisonii,* Mariposa lily, bulb eaten.

Frison (1978:336). The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including Sego Lily *Calochortus nuttallii.* (Galvan 1976).

Harrington (1967:159). Mariposa Lily, Sego Lily, Segolily Mariposa, *Calochortus gunnisonii* and *C. Nuttallii.* An important food source for Native American Indians and early pioneers. The whole plant is edible and has been used as a potherb. The seeds can be ground as food and the flower buds have been eaten raw as a salad food. The thick scaled bulbs are the real food source though, and are located about 5-6 inches in the ground. The bulbs are washed and the outer skin peeled off. They can be eaten raw or baked, roasted, or boiled for 15-30 minutes like a

potato. In 1848, the Mormon crickets of Utah had a cricket blight that destroyed their crops. The Mormons used the Sego Lily to survive, and it is the state flower of Utah.

Shimkin (1947:272). Shoshone word **sigobi ton3iap,** roots eaten like onion.

U.S. Department of Agriculture, Forest Service (1988:312). "The bulblike roots of the sego-lily were deemed a great delicacy by the western Indians. This species figured prominently in the history of the Mormon Church. When Brigham Young and his little band of followers emigrated into Salt Lake Valley in 1847, food was scarce. It is reported when the Mormon pioneers in Utah faced famine conditions in 1848-1849 due to hoards of crickets, drought, and frost on their grain fields, the sego-lily was an outstanding means of tiding them over."

Yanovsky (1936:12). Sego Lily, *Calochortus nuttallii,* Bulbs eaten raw or dried for winter use.

SKUNKBRUSH SUMAC, *RHUS TRILOBATA*

Found currently at Miller Spring 48FR3309 and Onion Flats 48FR760.

D. Fowler (1965:82-88, 159-161). *Schmaltzer glabra,* Smooth Sumac, for making pipestems and bows.

Scott-Cummings et al. (2001). *Rhus* seeds from this plant were recovered at 48FR3243 Late Prehistoric.

U.S. Department of Agriculture, Forest Service (1988:752). "The Indians prized the tough, pliable shoots of skunkbrush in basket making. They also used the dried, powdered fruits as a lotion in the treatment of smallpox. The powder was mixed with water and applied to the unbroken, hard pustules, but was used dry on the open sores. These uses are reflected in the English names Squawberry and Squawbrush applied to this species."

SPHAERALCEA

Scott-Cummings et al. (2001). Seeds from this plant were recovered from 48FR3091Middle Archaic; 48FR3092 Late Archaic; 48FR3243 Late Prehistoric.

SPIKERUSH, *ELEOCHARIS* SP.

Guernsey (1989:133, 141, 147, 148). The bulbs were eaten and the leaves woven into mats and baskets. Medically the plant was used to induce vomiting. The plant is a riparian species natural to the Legend Rock site, and goes into seed during late summer to early fall. Also, spikerush was used by some Indians during the Sun Dance, where the plant is placed on the buffalo skull. (Vestal 1952; Heizer and Elsasser 1980; Hart 1981).

SOLANCEAE

Batson (1982:148-149). Solanaceae (Nightshade Family)

Hamel and Chiltoskey (1975:51). *S.nigrum* This is the nightshade/potato family. "Tea leaves and stem if lonesome because of death in family; emetic; young leaves of *S.nigrum* as potherb; root of *S.tuberosum* as food."

Scott-Cummings et al. (2001). Seeds from this plant were recovered at 48FR3244 Late Prehistoric.

SPOROBOLUS

Scott-Cummings et al. (2001). Seeds from this plant were recovered at 48FR3091 Middle Archaic; 48FR3243 Late Archaic; 48FR3092, 48FR3243, 48FR3244 Late Prehistoric.

SUAEDA

Scott-Cummings et al. (2001). Seeds from this plant were recovered at 48FR3092, 48FR3243 Late Prehistoric.

SUNFLOWER, *HELIANTHUS*

Batson (1982:179). *Helianthus* L. Sunflower.

Frison (1978:341-342). Paleoindian storage pit deposits were found in the Schiffer Cave, a small dry rock shelter on the eastern slopes of the Bighorn Mountains, with *Helianthus, Opuntia, Amaranthus, Prunus, Pinus,* and *Juniperus* among the charred seeds recovered. Frison (1978:336), the Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including Amaranths *Amaranthus, sp.* (Galvan 1976).

Scott-Cummings(2001). *Helianthus* seeds were recovered from 48FR3244 Late Prehistoric.

TANSY MUSTARD, FLIXWEED, *DESCURAINIA* SPP.; *SOPHIA* SPP.

Guernsey (1989:148). The plant is a disturbed area species natural to the Legend Rock site 48HO4.

D. Fowler (1965:82-88, 159-161). *Sophia sonnei,* Tansymustard, seeds eaten, used in soup.

Harrington (1967: 307-309). Tansy Mustard, Flixweed, *Descurainia,* spp. (*Sophia* spp.) "The species of this genus resemble each other closely and all of them can probably be used in the same way as food." A good emergency food, but probably a poor steady diet food. The seeds were used by Indians in the production of "pinole." The pods were collected and pounded to release the seeds, which were then parched and ground into a meal. The meal was used for mush, bread, and to thicken soup. The young shoots were used as a potherb. The greens were placed in alternating layers with hot stones in a fire pit, with the top covered like a Dutch oven for steaming about 30 minutes. The food was then eaten or dried and stored for future use. Harrington tried them raw and found them bitter with an offensive odor. The

young plants boiled for 3-4 minutes with 2-3 water changes reduced the odor and bitterness, but not entirely.

Scott-Cummings et al. (2001). *Descurainia* seeds were recovered at sites 48FR3244 and 48FR3245 Late Prehistoric.

Shimkin (1947). Shoshone word **'hartawisiwep**, only animals ate it.

Yanovsky (1936:27). Tansymustard, *Sophia incisa*, Seeds parched and ground for food in Montana and Oregon. *Sophia pinnata*, Seeds cooked with water to mush and eaten with salt; leaves boiled, or roasted between hot stones; Utah to Arizona. *Sophia parviflora*, Seeds used in bread making and for mush.

THISTLE, *CIRSIUM SP.*

Frison (1978:338-339). The Leigh Cave Site is a small rock shelter of the McKean Complex, from the Early and Middle Plains Archaic periods, with dry deposits, at an elevation of 5,600 feet, in the Bighorn Basin, indicating intensive use of the wild onion and Mormon cricket, with roasting pits. Besides the wild onion, nine other usable plants were present: buffalo berry, prickly pear, chokecherry, thistle, juniper, limber pine, wild rose, wild rye, and yucca.

YUCCA, *YUCCA BACCATTA*

Galvan Food Group II: Late Summer to Early Fall. The group includes ripening fruits and seeds, depending on the specific plant.

Frison (1978:338-339). The Leigh Cave Site is a small rock shelter of the McKean Complex, from the Early and Middle Plains Archaic periods, with dry deposits, at an elevation of 5,600 feet, in the Bighorn Basin, indicating intensive use of the wild onion and Mormon cricket, with roasting pits. Besides the wild onion, nine other usable plants were present: buffaloberry, prickly pear, chokecherry, thistle, juniper, limber pine, wild rose, wild rye, and yucca.

Harrington (1967:332). Yucca, Datil Yucca, Spanish Bayonet, Soapweed, *Yucca baccatta.* Important economic plant of Southwest Indians. There are two pod groups: 1) dry pods where seeds fall out; and , 2) fleshy pods, more like an apple, where the seeds do not fall out. The fruits of the Datil Yucca are fleshy at maturity, and are a sweet, palatable food source. The Indians split the fruit and removed the seeds and fibers. Sometimes they were roasted or boiled before removing the seeds and fibers. The fleshy pulp is edible in a number of ways, or could be sun dried for food storage. It can be boiled down into a paste, molded into cakes, and dried. The cakes are later used by boiling for gruel, dumplings, bread, conserve, etc. The fruit are cathartic to people not accustomed to eating them, should be used sparingly t o start. The seeds can be roasted and eaten or ground into a meal. The flowers are edible , as are the tender young flower stalks. The bayonet stalks were used by Southwest Indians as a weaving fiber and fashioned into mats, sandals, rope, baskets, etc. The roots were crushed to make a soap.

Niethammer (1974:29-31). The large fleshy fruits were eaten raw, baked, boiled, dried, and ground into meal. The tender central leaves were also cooked in soups, boiled with meat, and used in a variety of food combinations. Zuni women boiled the fruits and then peeled them when cool. The pared fruit was then chewed to soften it. The next day the softened fruit was boiled, cooled, and made into patties about 3 inches in diameter. The pats were then sun dried on the roof for about 3 days. The dried fruit could then be eaten, or soaked in water and made into a syrup. The Apaches collected the fruits, sun ripened them, and then roasted them in hot ashes. The skin turns black, but is easily peeled off. The baked pulp was then sun dried for several days.

Yanovsky (1936:15). Yucca, *Yucca baccata*, Fleshy banana like fruit eaten fresh or cooked, unripe fruit roasted before eating, ground fruit pressed into cakes and dried in the sun preserved for winter use; flower buds roasted for food, fermented beverage made from the fruit, Southwest US.

YUCCA, *YUCCA GLAUCA*

Galvan Food Group II: Late Summer to Early Fall. The group includes ripening fruits and seeds, depending on the specific plant.

C. Fowler (1986:69). Use of fruits: Chemehouevi, Nev. and Utah Southern Paiutes.

Frison (1978:338-339). The Leigh Cave Site is a small rock shelter of the McKean Complex, from the Early and Middle Plains Archaic periods, with dry deposits, at an elevation of 5,600 feet, in the Bighorn Basin, indicating intensive use of the wild onion and Mormon cricket, with roasting pits. Besides the wild onion, nine other usable plants were present: buffalo berry, prickly pear, chokecherry, thistle, juniper, limber pine, wild rose, wild rye, and yucca. Frison (1978:336): The Medicine Lodge Creek site involved a continuous occupation and use period for 10,000 years, and is located within easy access to five diverse ecosystems in the Bighorn Basin, including Choke Cherry *Prunus virginiana.* (Galvan 1976).

Gilmore (1977:19). *Yucca glauca* Nutt. Soapweed, Spanish Bayonet, Dagger Weed. **Hupestula** (Dakota). **Duwaduwa-hi** (Omaha-Ponca). **Chakida-kahtsu** or **Chakila-kahtsu** (Pawnee). The root was used by the Omaha and Pawnee in the "smoke treatment," and by all of the tribes as a soap, especially for the hair. The leaves

were macerated until the fibers were cleared and the point cleared, with the remaining leaf and tip, the Yucca was used as a needle and thread.

Harrington (1967:336). Yucca, Small Soapweed, Spanish Bayonet, *Yucca glauca*. This plant is found commonly in Wyoming. The leaves accumulate salicylic acid and should not be eaten, otherwise it has much of the same features and uses of *Yucca baccata*. See the above listing.

Moore (1979:169). The roots can be collected any time of the year. The plant is still used as a sudsing agent for commercial soaps, and is a home remedy for arthritic pains -- one fourth ounce of inner root boiled in one pint of water for 15 minutes and drunk 3-4 times daily. On some people this treatment may have a laxative effect and cause cramping.

U.S. Department of Agriculture, Forest Service (1988:816). The Indians used the fruit of the datil as food; the roots of both species as soap; and the leaves as fiber in weaving.

Walker et al. (1977: 27). Yucca glauca, small soapweed, stems and flowers eaten raw or cooked. Seed pods boiled. Root used for soap (Yanovsky 1936:15; Harrington 1967). Baskets could be made of split strands of yucca (Grinnell 1972:246).

Yanovsky (1936:15). Soapweed Yucca, *Yucca glauca*, stems and flowers eaten raw or cooked; seed pods boiled for food; Utah and Southwest US. Spanish Bayonet, *Yucca treculeana*, Fruit eaten or made into fermented beverage in Southwestern US.

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THE MALLI GOSHEN SITE, CAMPBELL COUNTY, NORTHEASTERN WYOMING

by
Mavis Greer and John Greer

ABSTRACT

A large single-component Paleoindian site was found on a short tributary to the Powder River during a recent energy survey. The intact site occupies a sand-covered bench bordered by intermittent drainages and a semi-permanent seepage area. Surface artifacts include a variety of chipped stone tools, retouched pieces, debitage, and hearth remains. The site contains buried cultural deposits, with a good potential for future contributions to regional Paleoindian studies. No subsurface testing or excavations have been conducted.

INTRODUCTION

This report provides basic site information, gathered during initial surface inspection, on a Paleoindian site in northeastern Wyoming. More details, including the site map and artifact distribution, are on file with the Wyoming SHPO and the BLM (Greer and Greer 2002). The site (48SH1162) was recorded during a surface reconnaissance survey for coalbed methane development. Several artifacts and a potential hearth were noted, with cultural materials eroding from shallow subsurface deposits. No subsurface testing or excavation was done. Brief descriptions of the 26 observed artifacts provide preliminary information on the artifact assemblage since sites of this age, especially in such a relatively undisturbed condition, are not common.

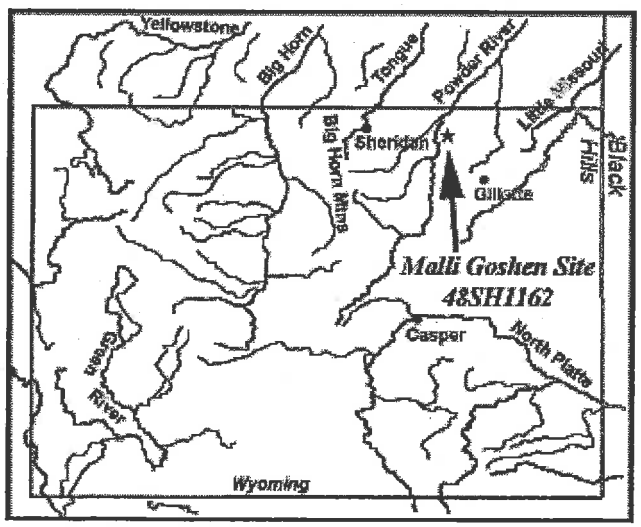

Figure 1. Location of the Malli Goshen Site.

SETTING

The site is in an upland area east of the Powder River and on the dry to intermittent drainage of Cross H Creek, a tributary that flows northwest between prominent clay and sandstone ridges and extensive bench systems toward the Powder River (Figure 1). The main river valley is visible in the distance, and access down this lateral drainage to the river is easy. This area is within the Powder River Breaks, although the main heavily dissected zone, with more junipers and pines, is downstream from the site but is easily seen from it. The surrounding site area is characterized by long ridge and spur systems with occasional sculpting along the crests. Ridges have tentacle-like fingers and spurs with flat benches that stair-step down to adjacent drainages. Vegetation through the immediate area is dominated by dense sage on the southwest side of the main drainage, across the lower flats and benches and up on to the steeper hillslopes. Benches and spurs east of the creek mostly are covered with scattered grasses and much less sage. Most sites in this area are along these more open lower benches bordering and overlooking the main dry creek channel (Figure 2).

Cultural materials on the site are somewhat widely and sparsely scattered across the crest and upper sides of a broad bench. This appears to be a remnant of what was once the old valley bottom terrace and now is a gently sloping finger within the eroded bottomland. The wide flat finger is bordered on the southwest by the northwest-flowing Cross H Creek, a prominent, dry channel with high, sloping, eroded silt embankments. The north side of the site is bordered by a prominent tributary drainage that drops rather steeply into the main creek arroyo just northwest of the site. The eastern end of this tributary, just north of the site, is a large seasonally swampy area now recognized as an alkali zone with dense grass. The large seasonal seep area has been active for at least the memory of the present landowner, and water runs down the drainage and into the main creek. The concentration of lithic scatter sites around this area and the presence of the Goshen point at this site indicate that this probably has been an active spring for at least 11,000 years. Lateral slopes dropping into this northern tributary are relatively gentle but are very eroded.

Figure 2. Site area, looking southeast.

Artifacts of this large campsite are exposed on eroded slopes and deflated areas on and just off the broad bench crest. They are being exposed by erosion of the compact silty soil which underlies sandy deposits held in place with sod. Between large erosional bare patches, which provide excellent surface visibility and where most of the artifacts are being exposed, remnant humps on the north side of the ridge are held in place by a layer of short grass and prickly forb sod. Sage, prickly pear, rabbitbrush, and occasional yucca are scattered mostly off the crest. The flat ridgecrest has localized areas of ponded erosion, with lateral erosion around the edges of the crest. Sand deposits across the crest mostly are undisturbed, suggesting that the main portion of the site in this area is buried and intact. Across the site there is minimal natural pebble gravel, which is dominated by very fine ferrous sandstone, scoria, shale, and low-grade porcellanite, with some burned quartzitic material. Vantage is open but is oriented northwest down the creek, toward the Powder River breaks. Elevation is about 3870 feet.

SITE CONTENTS AND DESCRIPTION

Hearth remains and lithic artifacts were noted in an area about 100' North-South by 600' East-West, with the possibility that buried cultural materials and deposits extend out beyond those boundaries. Of the 26 lithic artifacts observed, ten tools were noted (Figures 3-4) and are described below. Details of unaltered flakes and chunks are listed in Table 1.

FEATURE 1, HEARTH

A small cluster of three burned quartzite pebbles and one dark gray scoria chunk are believed to be the remains of a small hearth. The three pieces of quartzite appear to be reddened from intensive burning. The feature covers an area only about 25 cm across. There is no charcoal or staining exposed on the surface, but no subsurface probing was done and the firepit may still be intact below the surface. It should be excavated as part of a larger block to determine its form, contents, and context.

ARTIFACT 1, GOSHEN POINT

The basal half of a very thin Goshen dart point is made of very fine-grained high quality semi-translucent brown chert. The dorsal face is partially covered with white patina. This is a wide lanceolate point with fairly straight, distally expanding lateral edges, dully pointed basal corners, and a fairly deeply concave base. Lateral and basal edges are not ground or smoothed. There is fine collateral flaking and very fine marginal retouch on both faces. The fragment measures 38 x 34 mm x 4 mm thick. It is estimated that the point originally was about 9-10 cm long when complete.

ARTIFACT 3, BLANK

A retouched initial decortication flake is of variable medium gray, medium brown, and purple fine-grained chert.

Figure 3. Artifact 1, dart point.

The dorsal face is mostly covered with cortex, although the three edges of the face have been very steeply beveled. The opposite or interior (ventral) face has been flaked around its subrectangular circumference. This perhaps was intended as an initial stage blank, although it could have been intended as a possible tool. It measures 50 x 40 mm x 14 mm thick.

ARTIFACT 6, END SCRAPER

An interior thinning flake is of light tan fine-grained chert with minute black dendritic inclusions. It is high-grade and minimally translucent. This is an expanding flake with a very small multi-faceted platform as if struck from a fairly thin biface. The expanding flake has been unifacially retouched on the straight lateral edges. The distal bit is highly rounded and somewhat irregular. Lateral bit corners are angular and pronounced. The flake is very thin, and all flaking is unifacial. The artifact is complete and measures 33 x 26 mm x 4 mm thick.

ARTIFACT 8, BIFACE

A small biface is of purplish very fine-grained smooth chert. This is a tear-dropped shaped biface with a highly rounded almost pointed proximal end and a dully pointed constricted distal portion. It has been highly bifacially flaked, and one narrow thinning flake scar runs all the way across one face. At least one face and parts of the other have been somewhat smoothed as if from use. It is possible that this originally was a functioning tool and not simply a preform. Thetool measures 43 x 30 mm x 7 mm thick.

ARTIFACT 9, GRAVER

A unifacially retouched flake is of purplish gray fine-grained chert with some brownish yellow near the exterior part of the original cobble. This core reduction flake has been unifacially retouched around its circumference. It does not appear to have functioned as a scraper but probably was a graver with a broad short chisel type point. The tool is complete and measures 37 x 40 mm x 9 mm thick.

ARTIFACT 10, END SCRAPER

A small end scraper is made of high quality somewhat semi-translucent dark brownish gray chert with some variegated flow patterns in the material. This is an expanding interior core reduction flake with a very small platform and greatly expanding lateral edges. The highly rounded distal bit has been steeply unifacially retouched. Lateral bit edges are highly rounded. The bit area has had a flake removed on the ventral face which produced a typical slight undercut. The bit edge is considerably rounded from use, and both the dorsal and ventral faces are somewhat polished from use. The artifact is complete and measures 42 x 30 mm x 7 mm thick.

ARTIFACT 18, SCRAPER

A small scraper is made of light to dark gray very high quality chert with a white cortex. It is a somewhat asymmetrical secondary core reduction flake, which expands considerably from a moderately small platform. The distal portion has been somewhat ventrally thinned to undercut the distal bit. Lateral edges and the entire rounded distal bit have been very finely and intensively unifacially retouched to form a scraper. The edge is still sharp, apparently from resharpening. Part of the distal face still has old flake scars from the somewhat discolored and smoothed original surface. This indicates that the dorsal face at one time was heavily smoothed and discolored from use and that most of that face has been revitalized through reshaping or resharpening. The scraper measures 39 x 33 mm x 11 mm thick.

ARTIFACT 23, SCRAPER

A scraper is made of fairly low-grade grayish purple porcellanite, as judged from the surface. A snap across the distal bit shows the interior material to be very high-grade and smooth, while the exterior is somewhat weathered and granular. It is assumed that when the flake was originally retouched and used the material was the exposed high quality characteristics of the interior part of the flake. This is an interior core reduction flake from a fairly high angle multi-faceted platform. The flake expands slightly, with straight lateral edges that are moderately steeply unifacially beveled. The lateral edges both coincide with stem like features that extend 27 mm from the base and then flare slightly outward in shoulder like proportions. From there distally the very slightly convex edges begin to constrict toward what is believed to have been a rounded distal bit. All flaking on the piece is unifacial. Alternatively, this could have functioned as a hafted point, knife, or scraper, with the hafting element approximately 30 mm long and the remainder of the piece about 30 mm long. The entire piece, therefore, when complete, was probably about 60 mm long. The remaining fragment measures 50 x 35 mm x 7 mm thick. Its overall shape similarity to Hell Gap points seems noteworthy.

ARTIFACT 24, BIFACE

A small biface is of grayish purple fine-grained high quality chert. The circular piece has been completely bifacially flaked around its circumference. Flaking is crude,

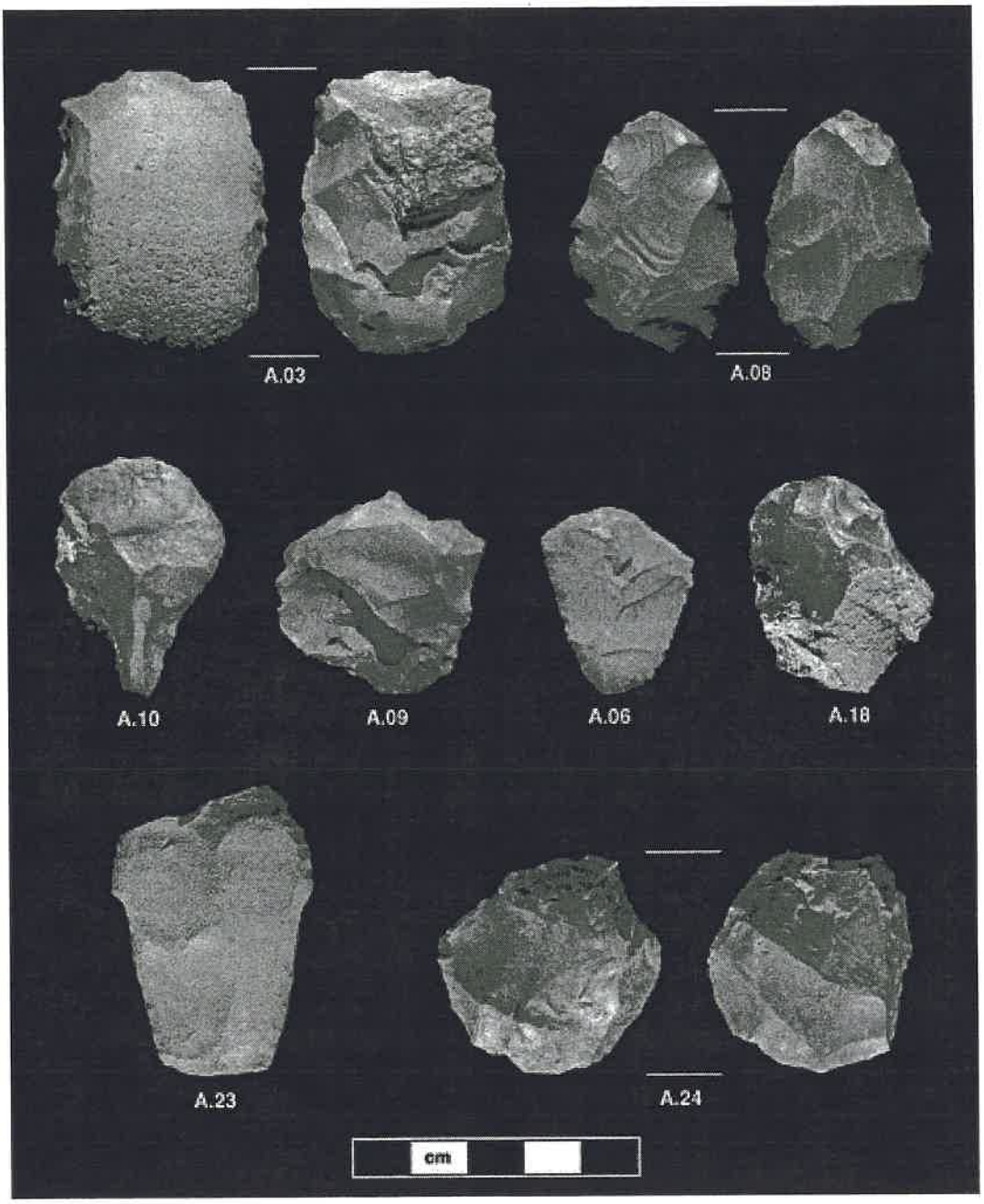

Figure 4. Other artifacts.

and there is no fine lateral retouch. It is not certain if this was a tool, but flakes mostly are fairly broad, expanding, and elongated. There is no evidence of use. The piece measures 40 x 38 mm x 10 mm thick.

DISCUSSION

The site is a Goshen period Paleoindian site, and everything seems to suggest it is a large, intact, single-component occupation area. At the time of this inventory, cultural remains were observed only in linear erosional areas along the edge of the crest, suggesting only a small portion of occupational debris has been exposed and most of the site is still intact under the grass-covered deposits to the south. The hearth and artifacts are exposed in somewhat deflated blow-out areas. It is estimated materials originated from just below the surface to about 20 cm deep. Deposits are probably even deeper on the crest to the south. Therefore, the erosional pattern, topography, and information from previously excavated Goshen age sites (Frison 1996) suggest the site area may be at least as large as 300' north-south, which would at least triple the size of the observed

ART #	MATERIAL	COLOR	L X W X TH MM	TECHNOLOGY
2	petrified wood	dark brownish yellow	* 20 x 20 x 5	interior
4	fine-grained chert	chocolate brown	* 50 x 40 x 14	interior
5	petrified wood	dark yellow	* 13 x 5 x 2	interior
7	very high grade non-local chert	semi-translucent brownish-gray with dark red dendritic inclusions	* 19 x 19 x 3	interior thinning
11	petrified wood	dark yellow	* 18 x 15 x 3	interior
12	low quality non-local porcellanite	grayish-purple with a reddish cortex	60 x 50 x 24	chunk
13	high quality chert	dark gray chert with some white patina	* 21 x 24 x 6	secondary decortication flake
14	fairly low quality chert	light to medium gray with granular cortex	50 x 26 x 22	chunk
15	very fine-grained chert	pinkish to purplish medium gray with a yellowish smooth cortex	38 x 24 x 12	chunk
16	very fine-grained chert	purplish gray	21 x 15 x 3	interior core reduction; very tiny heavily multi-faceted striking platform; from a fairly thin bifacial core, presumably an advanced stage blank or a low stage preform
17	somewhat granular, very low quality porcellanite, almost high quality scoria	light gray	* 32 x 17 x 6	initial decortication
19	very fine-grained chert	yellowish to grayish brown, from small pebble with a thick smooth fairly dark yellowish brown cortex	16 x 13 x 4	initial decortication
20	low quality petrified wood	light gray to white	* 20 x 23 x 5	exterior decortication
21	fairly fine-grained chert, somewhat granular, almost like quartzite	medium greenish-yellow from small pebble with a thick smooth yellowish-brown cortex	32 x 21 x 8	initial decortication
22	very fine-grained non-local chert	dark brownish red with black dendritic inclusions; originally yellowish brown, burned or heat-treated to dark red	* 26 x 14 x 5	interior
25	low quality porcellanite	high quality light gray interior; outer layer low quality light gray; surface oxidized rougher and coarser	* 17 x 23 x 5	interior core reduction; multifaceted platform with a highly battered edge
26	petrified wood	dark gray, with lighter color cortex	47 x 34 x 14	secondary decortication chunk

Table 1. Unaltered flakes and chunks. * = fragment.

area of exposed artifacts. The buried portion of the site almost certainly extends into the uneroded and undisturbed area on the higher crest of the spur.

Tools exposed at this time include a high quality chert Goshen dart point, two chert end scrapers, two additional scrapers (one chert, one porcellanite), two chert bifaces, and a chert graver. Flakes are chert (8), petrified wood (4), and porcellanite (2). The four chunks noted are chert (2), petrified wood (1), and porcellanite (1). Most materials probably were collected from gravels in the general vicinity of the Powder River, although the source for the gravels is not known. Cherty materials occur in rounded pebbles with a fairly thick and highly smoothed cortex. The high percentage of finished tools, the high quality of the chert, and the diversity of chert suggest all artifacts, including the Goshen point, are contemporary. Paleoindian period sites, in general, are known for their generally high tool:flake ratio and for their use of high quality raw materials (Frison 1996:212).

The single observed dart point is clearly within the morphological range of the Goshen type. Similar points have been reported from several sites across the Northwestern Plains and are known to date about 11,000 years ago (Frison 1991:25, 44-46, 52; 1996:8, 212). Other sites also contain similar kinds of end scrapers, other unifacially retouched pieces, gravers, and various bifaces and preforms. This site, then, seems to fit well with other Goshen sites and is representative of that cultural complex.

Thus, the site appears to be a relatively large, single episode campsite utilized about 11,000 years ago during the Goshen part of the Paleoindian period. Sites from that period are relatively rare, and the fact that this one appears to have such a large portion of the occupational area intact increases its importance immeasurably. If this is indeed a single component site, as suggested by the kinds and distribution of artifacts, then this would mean that all site characteristics and contents are directly and closely related and represent a single group of people at a single moment in time. Study of such sites, in aggregate and from constantly accumulating new information, such as this site, is essential for advances in

regional archeology and cultural history. The relation of this site to other nearby lithic scatter sites in immediately surrounding areas and extending northward down the east side of the main draw, particularly from the standpoint of an extended integrated community with dispersed associated outliers, may be attainable from additional work here and in surrounding sites. Because artifacts are being exposed in an erosional context, the site appears to have a potential for additional buried materials and possibly features, such as hearths, which could provide information on the use, function, absolute age, and archeological affiliation of the occupation, and its position within the region. Because of its potential to contribute additional research information, additional intensive study, in the form of extensive excavation, is recommended.

ACKNOWLEDGMENTS

We would like to thank Richard Taylor, Devon Energy Production Company, for the opportunity to conduct the survey that produced this site. Don Malli, owner of the property, allowed access and discussed this and other sites on the family ranch. The survey report (Greer and Greer 2002) and 48SH1162 site form, with more details (including site sketch and location map) are filed with the Wyoming SHPO Records Office. It is hoped that the Malli family will protect this site from disturbance and preserve it for future detailed, careful scientific investigation.

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Dr. Mavis Greer
Dr. John Greer
Greer Services
2599 S Paradise Dr
Casper, WY 82604 USA

Isaiah F. "Zeke" Flora's home was put under a medical quarantine in the 1930s after he hauled two bodies home from an ancient burial site. Flora was a notorious "archaeologist" who desecrated an ancient site in the Falls Creek area that remains off-limits the public to this day.

People who steal from archaeological sites are also disrespecting history, Farnsworth said. "When you alter what's on the surface, it's sort of like tearing out the pages of a history book," she said. "That could've been the only piece – like a fingerprint – that gave that piece of the puzzle of what that culture was doing," said Forest Service Special Agent Brenda Schultz, who investigated the Reservoir Ruin case.

Moving ancient artifacts makes it impossible for researchers to accurately reconstruct the lives of the people who lived there. The thieves often take bones, pottery shards, stone tools or even basketware or sandals for the money, Farnsworth said.

The artifacts are sold on the black market and end up in antique stores, at dealers, at trading posts, in arts and crafts stores, listed on the Internet or sold by word of mouth. "It ranges from local to international," Farnsworth said. "For the most beautifully decorated pottery, there's a most active widespread, even international, market."

Artifacts can fetch from hundreds to thousands of dollars depending on their condition. It's very difficult for investigators to catch the thieves. Once items end up in stores, potential buyers are often told that they came from private land, which is legal. "Whether that's true or not is pretty much impossible to prove," Farnsworth said. "Taken out of context, it's very hard to prove where they came from."

When bones are found disturbed, Schultz must consult with the tribes, who decide whether the bones should be returned to the site or placed somewhere else after a special ceremony. Federal law – including the Archaeological Resource Protection Act and the Native American Graves Repatriation Protection Act – governs what must be done to protect the artifacts and what penalties can be brought against vandals and looters.

Woosley and Rose have not yet been sentenced, but the result in a Utah case last week has upset some American Indians, who say penalties are not tough enough. Almost seven years after a couple was charged with robbing a prehistoric Indian burial mound in southeastern Utah, the wife was put on probation and the case against the husband was dropped, the Associated Press reported.

The Forest Service has some tools to try to fight the tide of looting. Residents who volunteer to monitor sensitive sites are among the most effective, Schultz said. The site stewardship program is a collaboration between the Forest Service, the Bureau of Land Management and the San Juan Mountains Association. Volunteers visit sites weekly or monthly, depending on a site's perceived vulnerability, and report problems to officials such as Schultz. Federal land managers also try to reduce vandalism and looting by not advertising all sites. "We don't publicize where all the sites are," Schultz said. "We try not to have anything out there that draws attention."

The Reservoir Ruins site is an elaborate series of mounds and kivas where between 50 and 100 people may once have lived year-round in substantial, multistory rock, wood and mud dwellings. Pottery shards, stone fragments and depressions in the ground hint at lives lived there. And freshly disturbed ground and hastily discarded piles of artifacts hint at the threat facing the Four Corners' history and American Indian culture.

http://durangoherald.com/asp-bin/article_generation.asp?article_type=news&article_path=/news/news021125_1.htm

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BLACK ROCK INDIAN CAVE LOOTER FINED $2.5M: Reno Gazette Journal; Martin Griffith, Associated Press

An Oregon man was fined $2.5 million for what federal officials are calling the worst case of American Indian cave looting in Nevada history. William Hammett, an Interior Department administrative law judge, handed down the civil penalty to Jack Lee Harelson, 62, of Grants Pass. The penalty, the fourth largest ever assessed for archaeological theft, was imposed Dec. 6 but not announced until late Thursday by the Bureau of Land Management.

Harelson was convicted in an Oregon court in 1996 of possession of stolen property and abuse of a corpse — charges stemming from the illegal excavation of an ancient site on the Black Rock Desert, 140 miles north of Reno. In looting Elephant Mountain Cave, Harelson destroyed what could have been one of the five most important archaeological cave sites in the Great Basin, a vast area covering most of Nevada and Utah, BLM officials said. Before it was looted over several years in the early 1980s, the cave contained a 10,000-year record of human life in northern Nevada, including that of members of the Paiute tribe.

"The desecration and loss of this site to all Americans is staggering," said Bob Abbey, Nevada state director of the BLM. "While we are pleased the judge ruled completely in BLM's favor, money can't bring back what was lost."

Harelson maintained his innocence and laughed when asked whether he would pay the penalty. His license as a securities agent was revoked after his conviction and he has not held a steady job since, he said. "I'm on Social Security and crippled, yeah, right," he said. "The federal government knew that I had nothing going in. They needed to slap someone. What's my reaction? I guess I have no reaction. You deal with the government and there are lies and that's what you have to deal with," he said.

BLM officials said there was overwhelming evidence that Harelson dug through and discarded all but the most

valuable artifacts in the cave. He and his wife discovered two large baskets in the cave, one with the body of a boy and the other with the body of a girl, court records show. They removed the bodies, baskets and other artifacts, and buried the bodies in their backyard. More than 2,000 artifacts were later recovered, including 10,000-year-old sandals that possibly were the oldest footwear found on earth, said Pat Barker, a state archaeologist for BLM.

"It's a devastating blow losing this information," Barker said. "This is outrageous. It's the worst case of looting we know of in Nevada and one of the worst in the West."

In his ruling, Hammett noted the insult to American Indians from the desecration of burials at the cave far outweighs the commercial value of the artifacts, leading him to use the archaeological value rather than the commercial value to determine the civil penalty.

Harelson acknowledged digging a "test hole" and removing some artifacts, but argued he did so only to interest Nevada archaeologists in the site. "Never once did I say those artifacts I took from the cave belonged to me," Harelson said. "They were test items. I was trying to prove a point that the cave was worthy of a controlled dig by the Nevada State Museum."

The statute of limitations on the excavation had expired by the time of Harelson's arrest in 1995. He was tried and convicted under Oregon law after the ancient remains and stolen property were found there in the mid-1990s. He was sentenced to 18 months in jail and fined $20,000. The Oregon Supreme Court later overturned his conviction on abuse of a corpse charges after determining the statute of limitations had expired.
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OFFICERS GET RARE TIP, CATCH TWO MEN ROBBING INDIAN GRAVES: St. Louis Post Dispatch, Nov. 21, 2002; By Peter Shinkle, of the Post-Dispatch

Robbing the graves of American Indians is lucrative, illegal and almost impossible to stop, since the crime generally occurs in remote areas far from police patrols. But federal and local officers responding to a telephone tip did catch two men in the act near Wappapello Lake in southeastern Missouri three months ago, setting up a rare prosecution that could bring the pair 10 years in prison.

Cynthia Jackson, assistant operations manager for the Army Corps of Engineers at the lake, about 100 miles south of St. Louis, said other parks and corps regions across the country have problems protecting archaeological treasures. "Every district in the nation has burial sites that are getting dug up," Jackson said in a recent interview. "We're the only ones who caught someone. That's unusual."

The anonymous call came Aug. 15 to the corps, which manages the lake as part of a 44,000-acre park in Wayne and Butler counties. Corps rangers, joined by a Missouri conservation agent and Wayne County sheriff's deputies, drove to a remote area near the lake and hiked a half—mile through hilly terrain. There they discovered the two men digging up an archaeological site, said Alan Dooley, spokesman for the corps. The officers arrested Steven S. Tripp and William T Cooksey as the two prepared to leave.

The men had about 15 arrowheads and artifacts in their possession, and Tripp had several items in his- shoes, said LeeAnn Summer, an attorney for the corps. The men had discovered human remains as they dug, but "they didn't want those for some reason, so they put them in a pile out of their way," she said. Both were indicted Oct. 24 on charges of destroying archaeological resources on federal land and damaging federal property. The , former charge carries a maximum penalty of two 'years. in prison and a $20,000 fine; conviction of the latter carries a possible 10-year term and $250,000 fine.

Cooksey, 53, of Union, appeared in U.S. District Court in Cape Girardeau, posted a $10,000 bond and pleaded not guilty. He could not be reached for comment for this story. His attorney, Terry Flanagan, declined to comment. Tripp, for whom no age and address were available, remained at large, a prosecutor on the case said. The charges relate to the artifacts only, and would apply regardless of the presence of the bones, officials said.

Corps officials placed a value of $14,000, on the damage they blamed on the suspects. Summer said it was not determined from which culture the artifacts originated. About 10 American Indian tribes, including the Cherokee, are known to have lived near the lake, she said.

The destruction of archaeological sites nationwide occurs constantly, said Patty Wright, assistant professor of anthropology at the University of Missouri at St. Louis. The black market for artifacts is booming here, and they're popular in Germany and Japan also, she said. A host of state and federal laws, including the U.S. Native American Grave Protection and Repatriation Act, make it illegal to destroy graves or move artifacts. It is legal to collect arrowheads and some other artifacts on private property, Wright said. But it is illegal to disturb graves - whether on private or public property - without first obtaining permission from proper authorities.

The laws have had little effect, she said. "The problem from an archaeological standpoint is that you take them out of their contexts, so you can no longer interpret anything about them or the people who made them. You just wind up with the artifact itself," she said.

Since the illicit dig at Wappapello Lake was discovered, the corps has filled in the holes. But it has not put up signs warning people not to dig there, out of fear of attracting attention to the site, Jackson said. "We're checking it daily," she said. "We take this seriously."
Reporter Peter Shinkie: E-mail: pshinkle@post-dispatch.com
Phone:314-621-5804

2002 CHAPTER INFORMATION

Absaroka Chapter
Vicki Finley, President – 307-587-0067
2021 Southfork Rd – Cody 82414
e-mail vfinley@trib.com
Walter Nelson, Vice President – 307-587-2015
286 Diamond Basin Rd – Cody 82414
Forrest Green, Secretary/Treasurer – 307-587-3779
194 Diamond Basin Rd – Cody 82414
e-mail pahaska@vcn.com

Ancient Trails Chapter
Cher Burgess, President – 307-283-1154
PO Box 562 – Sundance 82729-0562
e-mail betterway@vcn.cin
Lucille Dumbrille, Vice President – 307-746-2268
203 Grandview – Newcastle 82701-2204
Mary Capps, Secretary – 307-746-4142
PO Box 656 – Newcastle 82701-0656
e-mail capco@trib.com
Dr Alice Tratebas, Treasurer – 307-746-4917
PO Box 883 – Newcastle 82701-0883

Casper Chapter
Dr Mavis Greer, President – 307-473-2054
2599 Paradise Dr – Casper 82604
e-mail mavis@greerservices.com
Dr John Greer, Secretary - 307-473-2054
1599 Paradise Dr - Casper 82604
e-mail jgreer@greerservices.com
Gloria Boyce, Treasurer – 307-234-3898
7100 Sail Creek Rte Box 3 – Casper 82601-9612

Cheyenne Chapter
Susan Adams, President – 307-632-1273
807 Mitchell Ct – Cheyenne 82007
Susan Carlson, Vice President – 307-634-0629
10711 Beartooth Dr – Cheyenne 82009
e-mail beartoothc@worldnet.att.net
Donna Durako, Secretary – 307-634-4229
502 W Riding Club Rd – Cheyenne 82009
Nick Palmer, Treasurer – 307-632-3921
2214 Rooks Ave – Cheyenne 82007
e-mail npalmer104@aol.com

Cherokee Trail Chapter
Gary Herold, President - 307-326-5668
PO Box 1312 – Saratoga 82331-1312
e-mail gherold@union-tel.com
Doris Cornell, Vice President - 307-326-8148
PO Box 374 - Saratoga 82331-0374
Karen Herold, Secretary/Treasurer – 307-326-5668
PO Box 1312 – Saratoga 82331-1312
e-mail gherold@union-tel.com

Fremont County Chapter
Diane Porter, President – 307-856-6744
522 Dinwoody Cir – Riverton 82501-2210
e-mail wporter@wyoming.com
Alice List, Vice President – 307-856-5563
804 Lombardy Cir – Riverton 82501
Dot Sanderson, Secretary – 307-856-6790
814 N 12th E – Riverton 82501-3004
Bill Porter, Treasurer – 307-856-6744
522 Dinwoody Cir – Riverton 82501-2210
e-mail wporter@wyoming.com

High Plains Chapter - Inactive

June Frison Chapter
Dale Wedel, President – 307-745-6406
2675 Monroe St – Laramie 82070-6551
e-mail *dwedel@state.wy.us*
Dewey Baars, Vice President - 307-322-2851
1000 W 19th – Wheatland 82201-2434
e-mail baars@netcommander.com
Janice Baars, Secretary – 307-322-2851
1000 W 19th – Wheatland 82201-2434
email baars@netcommander.com
Sharon Long, Treasurer – 307-766-5324
1974 Van Buren St – Laramie 82070

Platte County Chapter - Inactive

Rawlins Chapter
Dr William Scoggin, President – 307-324-3484
104 W Spruce St – Rawlins 82301-5543
e-mail scoggin@trib.com

Sheridan/Johnson Chapter
Scott Burgan, President
1457 Pioneer Rd – Sheridan 82801-3333
BJ Earle, Vice President
PO Box 1106 – Buffalo 82834-1106
Bessie Brewer, Secretary/Treasurer – 307-655-2548
PO Box 51 – Dayton 82836-0051
e-mail Bessie@vcn.com

Sweetwater County Chapter
Tom Young, President
PO Box 169 – Granger 82934-0169
e-mail toyoung@wyoming.com
Dave Barker, Vice President
800 Chestnut – Rock Springs 82901-4832
email barker@rock.sw1.k12-wy.us
Karen Carlson, Secretary/Treasurer

Teton County Chapter
Sal Rodriguez, President
PO Box 3033 – Jackson 83001-3033
e-mail happycampers525@msn.com
Alan Bartholomew, Vice President
PO Box 407 – Jackson 83001-0407
e-mail arryhead@aol.com
Jill Anderson, Secretary/Treasurer
PO Box 1364 – Jackson 83001-1364
e-mail jmanderson@onewest.net

Wyoming Archaeological Society, Inc
Eva Peden, President – 307-332-7432
9 Appaloose – Lander 82520
e-mail epeden@tcinc.net
Nick Palmer, 1st Vice President
2214 Rooks Ave – Cheyenne 82007
e-mail npalmer104@aol.com
Don Bailey, 2nd Vice President – 307-332-6822
555 Eugene St – Lander 82520
Carolyn M Buff, Executive Secretary/Treasurer – 307-234-5424
or 1-800-442-2963, ext 2212 (work)
1617 Westridge Terrace – Casper 82604-3305
e-mail cbuff@caspercollege.edu
Dewey Baars, Editor – 307-322-2851
1000 W 19th St – Wheatland 82201
e-mail baars@netcommander.com

Wyoming Archaeological Foundation
Janice Baars, President (term expires 2002) – 307-322-2851
1000 W 19th St – Wheatland 82202
e-mail dbaars@netcommander.com
Barbara Keiry, Secretary/Treasurer (term expires 2004)
PO Box 3146 – Cody 82414-3146 – 307-868-2685
Gail Gossett, Immediate Past President WAS (term expires 2003)
– 307-856-5180
818 Lombardy Circle – Riverton 82501-3334
e-mail ggossett@wyoming.com
Dr John Greer, Member (term expires 2003) - 307-473-2054
2599 S Paradise Dr - Casper 82604
e-mail jgreer@greerservices.com
Dr George Frison, *ex officio* – 307-745-9277
4619 Oriole Lane – Laramie 82070
Dr Mary Lou Larson, *ex officio* – Laramie
e-mail mlarson@uwyo.edu
Dr Mark Miller, *ex officio* – Laramie
e-mail mmiller@uwyo.edu

Dewey Barrs, Editor
The Wyoming Archaeologist
1000 West 19th Street
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